DOMESTIC ENGINEERING

PUBLISHED EACH SATURDAY
BY
Domestic Engineering, (Inc.)

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Copy and cuts for advertisements intended for a particular issue should reach the office of DOMESTIC ENGINEERING on Wednesday of the previous week if it is desired that a proof of the advertisement shall be submitted. New advertisements can be received up to noon of Wednesday of the week of issue, but no proof can be shown.

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Suggestion:
Cut out; frame neatly; put in show window; change weekly.

To build a successful plumbing and heating business requires the same factors as the building of a successful grocery, dry goods, tailoring or shoe business. First--Selling good goods only, bearing maker's name and guarantee. Second--Employing courteous, reliable and skilled handlers of this material. Third --Making every sale so satisfactory that it leads to other sales to the same customer and recommendations to his friends.

What Would You Do?

Let me suppose for a moment to be talking only to the contracting plumbers and fitters who read "Domestic Engineering." The manufacturers, wholesalers and architects who usually find something of interest in this column may chuck it this week, for what I may say probably won't interest them, and certainly cannot do them three whiffs of good. But the contractor and his shop assistant cannot safely put this little speech in the discard.

* * *

I ask him again what he would do if Senator Clark should enter his establishment and say that he proposed to erect a home even more beautiful than that so sumptuously illustrated in this issue? Suppose he then asked your opinion about installing an indirect steam heating system with an air washing equipment—what would you say? Judging from my observations of you extending over a quarter of a century, a whole lot of you would try to discourage the Senator from installing such an expensive system, and tell him that a one pipe direct steam job would do just as well, and enough air for ventilation would leak in about the doors and windows. Yes, you know you would.

* * *

Then, should he not discover the moss on your back by your answer to that question, and should ask you about the cost of seventeen bath rooms fitted with solid porcelain baths, vitreous lavatories and hydrometer closets, with silver plated fittings, you would lead him gently from such dizzy heights of extravagance, and suggest that he look at your line of steel-clad baths and twelve-dollar low-down closet combinations.

* * *

Don't contradict! Don't say that I am overstating it. This is your favorite selling system and you are practicing it every day. **And why?** Because, in many cases, you have not made a sufficient study of your business to know the advantages of high grade work nor its cost. You have not mulled over the business in which you are earning your livelihood to realize that you can make as much profit on a thermostatic temperature-controlling device, in which but $20 or so of your capital is invested, as you make on the boiler you install in the same heating job in which you have tied up $200. You have not mastered the knowledge that specialties bear bigger profits than staples. When you get this knowledge rooted in your brain-pan, you will be keen on selling specialties. **It pays.**

* * *

So, too, you have yet to learn to dignify your business by encouraging the sale of good plumbing goods. You may cast out the fear that your inquiring prospective customer will be deterred from investing if you talk good goods at a fair price. That's what he wants to know. If $30 paid for a bath tub will make his house or apartment rent at a better proportionate price than a $20 bath, he wants to know it. **Study the problem from his standpoint,** and give him the best

knowledge and advice you can, and he will see the advantages to him in using none but marked, guaranteed goods.

* * *

If you can make more money on a well-constructed heat generator or vacuum heating system with temperature control than on two-carloads of pipe, do you not think you are a green goose not to do it? **Talk specialties and good goods. It's better so.**

Jno. K. Allen.

Domestic Engineering in the Residence of Senator William A. Clark, New York City

By Lucy Cleveland.

Written expressly for "Domestic Engineering." All rights reserved.

The magnificent marble residence of Senator William A. Clark at Fifth avenue and Seventy-seventh street, New York city, has been the work of willingly retarded advance, that reproach should never reprimand completion. The house has been building for ten years, and is not yet finished. It presents the theme of the later French Renaissance, the Art of the ceremonial era "when the *Court* became the nucleus of good taste around which gathered the genius and cultivation of a new civilization."* Again today a "new" civilization, a restless civilization—the Age of Electricity—presented its problems for solution in scientific sanitation to be grafted into the stone of a New York palace arising from the theme of the later French Renaissance, Electricity and Modernism to be welded into Classicism. To graft the requirements of an up-to-date home and household on the architectural elements of the great century of French efflorescence, herein lay the genius of the American atelier. As masters, the firm of Lord, Hewlitt & Hull, the architects of the palatial residence (advisory council, M. Henri Deglane of Paris, the architect of the Grand Palais of the recent French Exposition), have met this indispensability—the positive requirements of the latest developments in scientific sanitation. Over and above the ceremony in stone that it is, the marble residence conveys constructive lessons in its engineering department.

Look for a moment at the plan (see the basement plan on pages 108 and 109 and elevation on page 93): Here are two pavilions united by a tower. This tower is crowned by a lofty cupola with observation balcony. The pavilion to the west—facade on Fifth avenue—includes the grand salon, the petit salon Louis XV., the facade of the music room, and the larger bedrooms and reception rooms on the second and third floors. The lesser pavilion, extending along Seventy-seventh street, includes the banqueting hall and—in the mezzanine gallery—the two serving galleries and kitchen. On the upper floors, other breakfast rooms and reception rooms that connect with the suite of bedrooms in the pavilion on the Fifth avenue side. The hall of sculpture is directly under the tower, and is an imposing octagon, occupying two stories. Out of the hall of sculpture—to the north—the large picture gallery which leads, west, into the music room, and east into another picture gallery that extends along the driveway court, and whose lower floor is the faience gallery. To the east of the hall of sculpture is the banqueting hall; to the south, the conservatory. The reception rooms on the second and third floor suites maintain the octagon idea of the rotunda. In the basement is the engineering department, the modern sinews that work the Louis Quatorze palace of white marble. In the basement, also, on the Fifth avenue side, is the Turkish bath suite.

Happy Slip of the Pen.

By a happy slip of the pen the writer wrote "Pomp" room for "Pump" room, as she stood at its doorway in the great engineering department in the basement of the residence—and *looked*. Would not the procession of the François and the Louis have looked in some inexperienced amaze at modernism in the shape of scientific sanitation? I believe it. I would I had been a medium to evoke those "shades" when the door of the dynamo room opened, with its hum of the turbines—in a private residence! whose marble exterior of dormers and towers and sculpture (the polite architecture of the grand century of French efflorescence) spells the days of palace etiquette, of that epoch of stately manners when the American eagle was a little ruffled baby!—facing, albeit, the salt spray of Immensity.

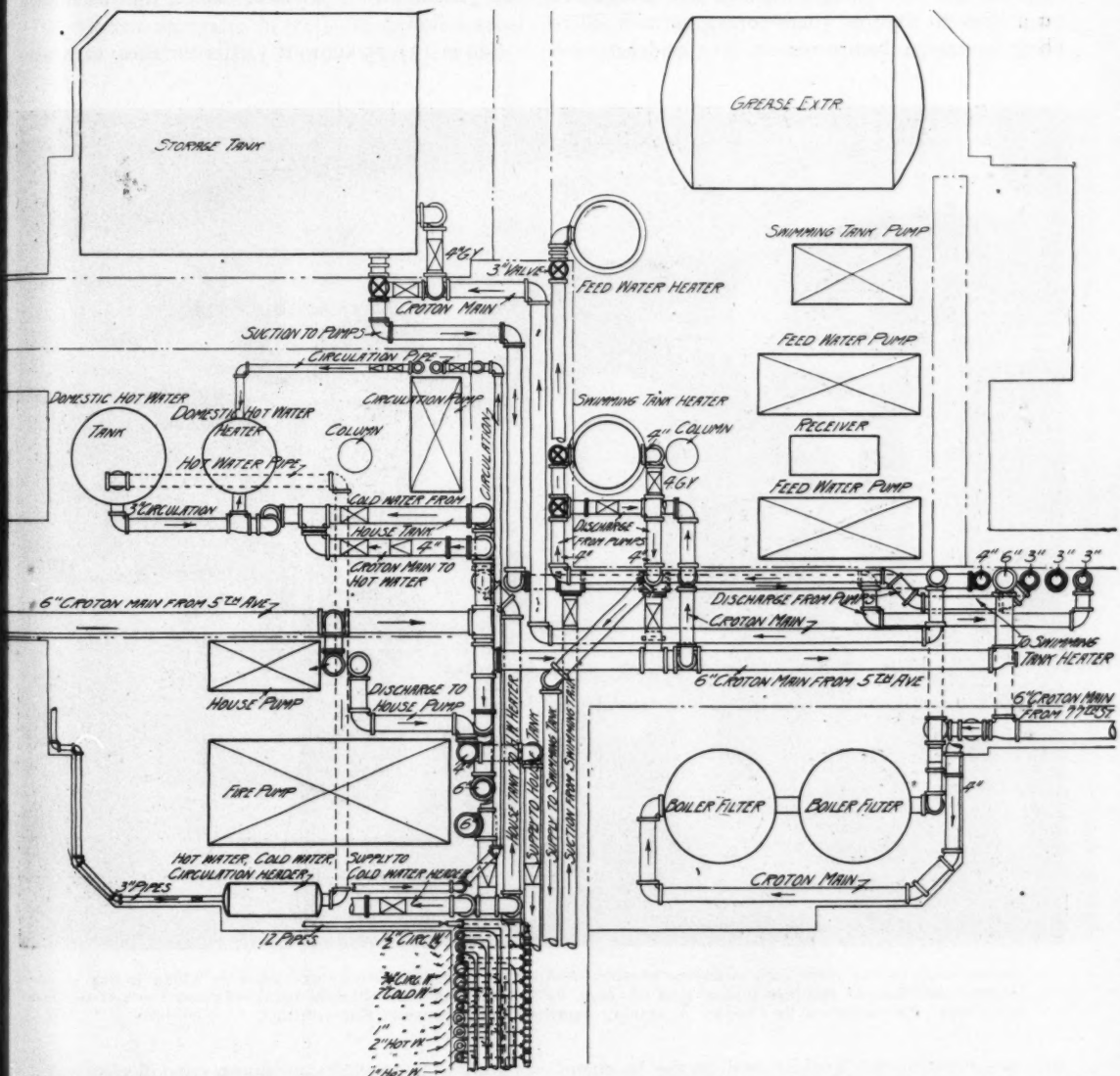
The Expansive Pump Room.

Step one moment with me into the expansive pump room in the engineering department. In this pump room there is the following category for scientific sanitation in the American home: One heater (very large), for bathrooms only; a separate heater for the swimming tank in the Turkish bath; one pair of filters for filtering the boiler supply (all the water used on the premises is filtered); two other pairs of filters for filtering the water for the bath and drinking supply, one of these connecting with the Seventy-seventh street main, and the other with

* "The Renaissance under the Valois."

the Fifth avenue main; one pair of pumps for filling the boilers; one pump for filling and emptying the plunge, or swimming-tank; one fire pump which pumps to the fire tank in the attic; and one house pump which pumps from the mains to the tank in the attic, house tank (the same pressure all through the building); each of these two pumps can be used for house or fire tank. There are two grease extractors (oil separators); a storage tank, in case the supply from the main is shut off, and there are three smaller boilers (hot water), the water coming across the pump room from the heater and feeding the hot water supply. Pipes lead from this hot water heater to hot water mains, thence to fixtures in the bathrooms. It has a shut-off valve for the main. About in the center of the pump room is a circulating pump which keeps the water circulating through the system, ensuring hot water at any fixture all the time. The pipes are all in covered trenches, open underneath. All the pipes are of bronze:

Water pipes,	Drainage pipes,
Elevator pipes,	Steam pipes,
Electric pipes.	



Piping plan of the hot and cold water supply, fire service, pumps, tanks and filters in the New York City residence of Hon. William A. Clark. Redrawn from the original piping plan of Rossman Company, plumbers.

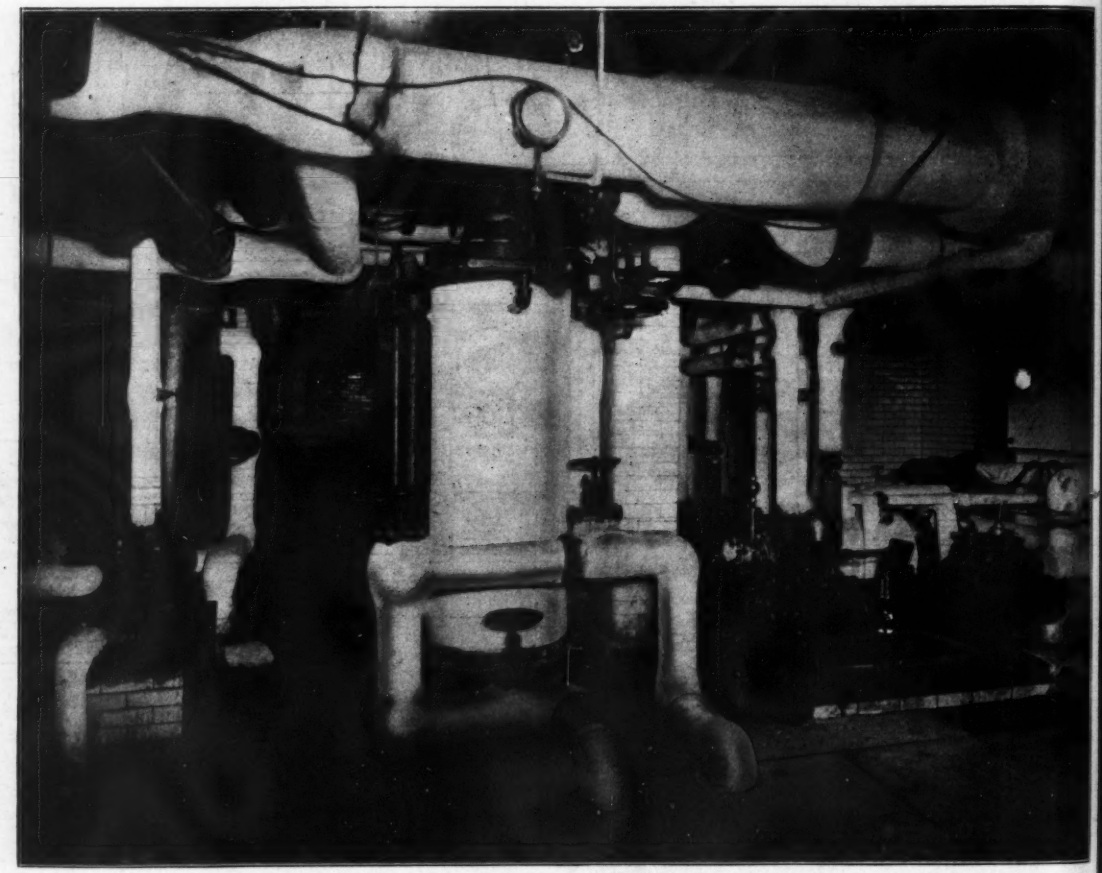
THE PIPING PLAN.

The sewage pipes are all bronze pipes throughout the building, and lead to the main sewer. Each section of plates over the trenches lifts up. In the trenches there is a drip header with valve to drain each line separately. There are similar headers for cold and for circulating water. There are twelve main lines to fixtures (bathrooms) upstairs, there being seventeen bathrooms in the residence, and this not counting the Turkish bath in the basement. The plumbing work is by Rossman & Co., of New York city. It will be seen on the plans of the engineering department (on page 93 and pages 108 and 109) that the boiler room adjoins the pump room, by a gallery that overlooks the boiler room, *which is sunk in an iron tank, brick-lined,* and is one story below the basement. A flight of steps, wrought iron, leads down from the gallery to the boiler room. There are three 250-horsepower "Scotch marine" boilers. The coal bunker feeds, by gravity, to the boiler room, and holds 200 tons. And here are the blow-off tanks.

THE DYNAMO ROOM.

Along a passageway, and the dynamo room (electric generators) is reached. Here, the installation is as follows:

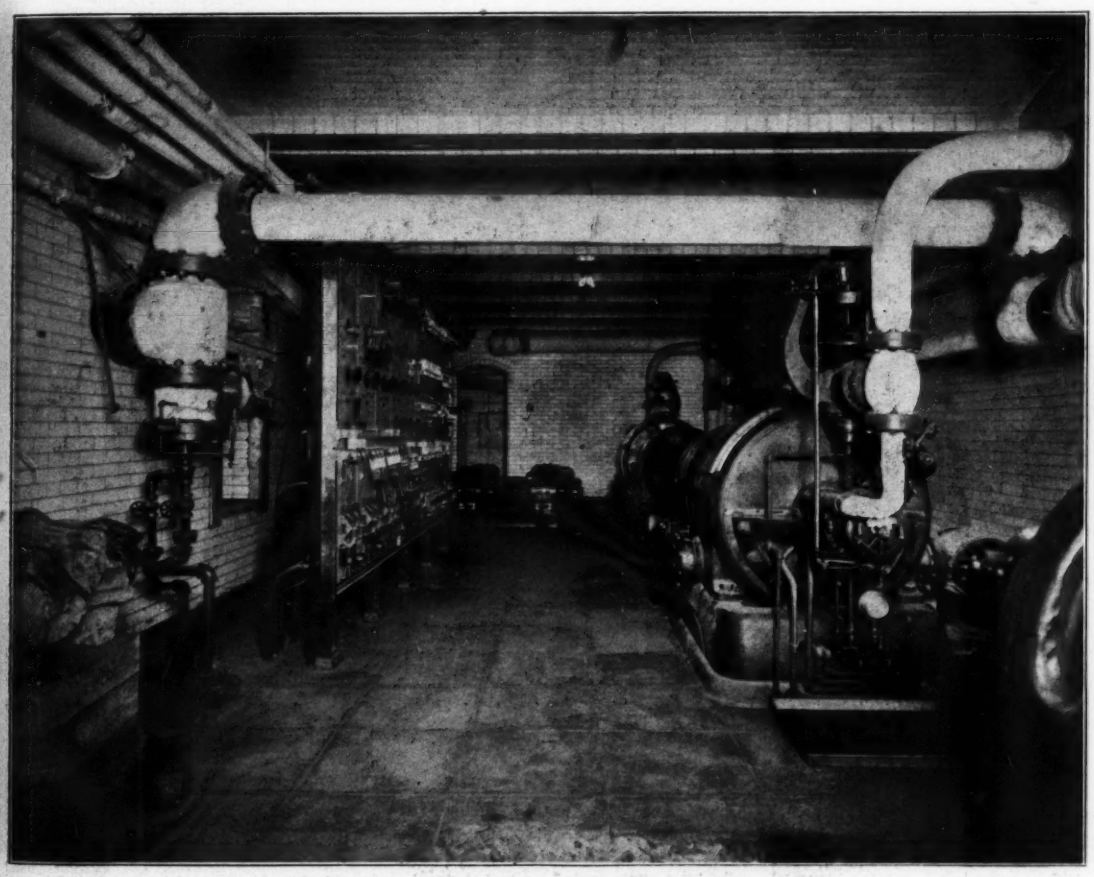
Three (3) 75-kilowatt Curtis turbines, each consisting of a 200-volt continuous current electric generator directly connected to and mounted on the same base with a non-condensing Curtis steam turbine operating at 2,400 revolutions per minute. The generator delivers 250 volts at 300 amperes, with sufficient electricity to operate approximately 1,500 15-candlepower incandescent lamps. By the use of a small balancer sets a neutral is derived, so that the residence is operated on a three-wire system.



Pump room in the New York residence of Hon. William A. Clark. In the text there is given a list of the machinery here housed and the piping plan on page 93 and the basement plan on pages 108 and 109 tell the rest of the story. Photographed by Charles A. Dunlap expressly for "Domestic Engineering."

having 250 volts between the two outside wires for motors and 125 volts between each outside wire and the neutral wire for lights. The steam end of the machines has a capacity of approximately 120 horsepower. The exhaust steam is used for heating the feed water, and also for heating the building during cold weather. The switchboard, for all the electric apparatus in the building, is a marvel; it measures fourteen feet long by seven feet high. It contains all necessary instruments for the measurement of the electricity, and switches for its control; also safety devices to prevent injurious inrush of current to any of the circuits. This switchboard connects with the fan motors for forcing the hot air up into the rooms. The installation is by the General Electric Co., 30 Church street, New York.

At night these turbines are shut down and connection is made with the Edison street system.



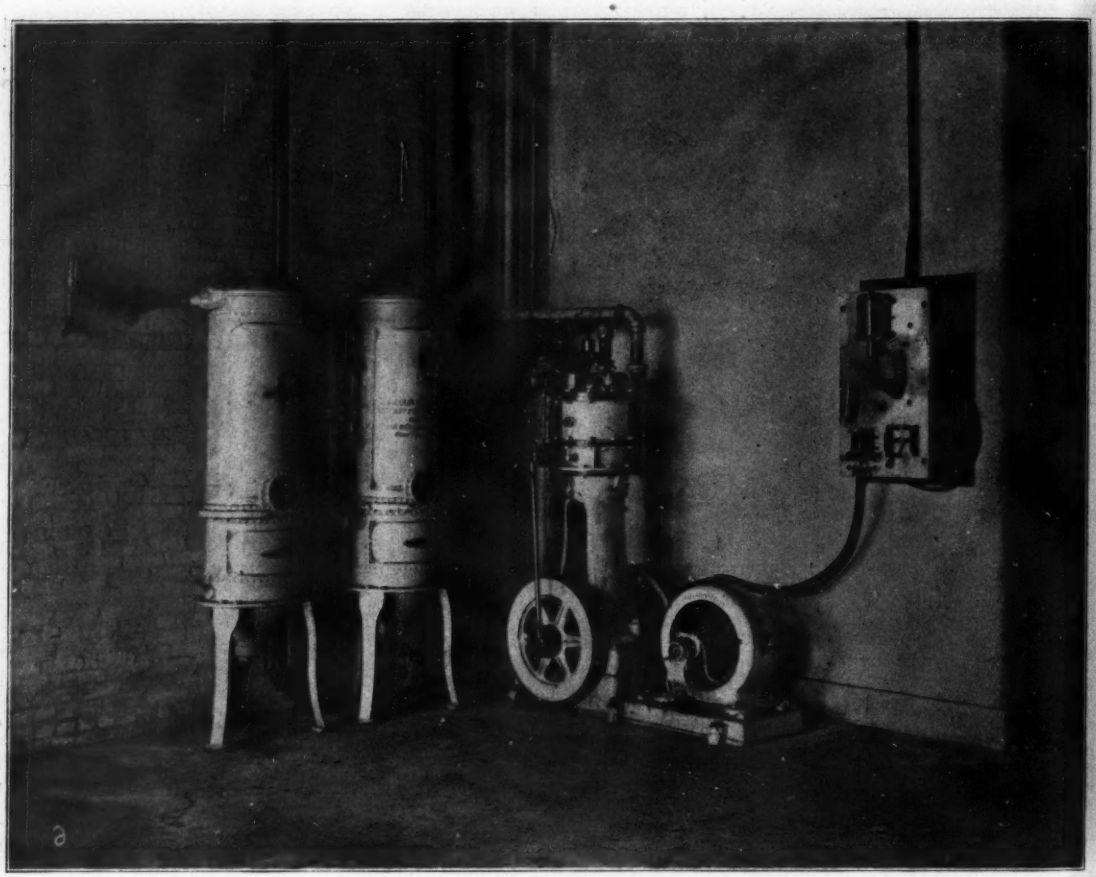
Dynamo room and marvelous switchboard in New Yory residence of Hon. William A. Clark. Photographed by Charles A. Dunlap expressly for "Domestic Engineering." Said to be one of the finest engineering negatives ever made of machinery in motion.

VACUUM CLEANING SYSTEM.

In this dynamo room is the vacuum cleaner apparatus—that banishes the old-fashioned broom with its "elbow grease." The principle of operation is as follows:

The use of a large volume of air flowing at high velocity into special sweeping tools called "renovators." The flow of air is caused by a high vacuum maintained by a suction or vacuum pump. For carpet or textile cleaning, a metal renovator with a narrow slot inlet is used, the inrushing current of air passing through the fibres of the carpet, dislodging the dust, and carrying it into the renovator, and on to the dust receptacles provided. There are many kinds of renovators for cleaning hard wood floors in this magnificent residence where all the suites have hardwood floors with rounded corners. There are renovators with felt or brushes surround-

ing the air inlet; for cleaning ceilings and walls, specially soft, thick brushes; soft book-renovators; flexible handle-renovators for cleaning inaccessible places. The parts of the system are as follows: The "renovators" above described; a system of piping and hose connection convenient to each room in the residence; rubber vacuum hose to connect "renovators" to outlets; a set of dust receptacles called "separators," to receive the dust, and situated in the basement near the machinery, and, finally, the machinery itself, consisting of a vacuum pump, driven by an electric motor; and the necessary appurtenances. These "separators" here are a special feature, and deserve further description. The current of dust-laden air from the renovator passes through the piping, where it receives a whirling motion, causing the heavier portion of the dust to be thrown down by centrifugal action. The air with the finer dust then flows into the wet separator, where it passes through water in such a manner that it is thoroughly freed from the remaining dust. The clean air is then drawn into the pump and is discharged into the flue or outer air. The object of this thorough cleaning of the air is two-fold. First, to segregate the dust where it may properly be disposed of; and, secondly, to prevent injury to the pump by the grit and other foreign matter. The advantages of cleaning by vacuum are in a considerable way self-evident. For instance, with the old method of cleaning with broom and duster a very considerable portion of the dust, and, incidentally, germs, were merely stirred up and driven into the air of the room, only to settle in a new place. With the vacuum system of cleaning, however, all dust and germs are drawn directly into the renovator and carried through the piping sys-



Vacuum cleaning plant in the New York residence of Hon. William A. Clark. Photographed expressly for "Domestic Engineering."

tem to receptacles in the basement. Another feature not so generally known, is the assistance to ventilation. A plant such as the one in Senator Clark's residence will remove nearly 100 cubic feet of air per minute, which will in a short time renew the air in a room of considerable size. The air renewed is of course replaced by air entering through the regular ventilation ducts of the building. The plant is installed by the Vacuum Cleaner Co., of New York.

and six dumb waiters; there being one electric elevator which ascends from the faience gallery to the second picture gallery.) Herein lies the advantage of the elevator plunger; the elevators are in a way suspended; the elevator is forced up by a piston utilizing hydraulic power; it is positively immune from accident. The engines pump into a tank where the water is placed under pressure of 150 pounds. From there, at the will of the elevator

Elevator pump room in the New York City residence of Hon. William A. Clark. Photographed by Charles A. Dunlap expressly for "Domestic Engineering."

The Elevator Pump Room.

Leading out of the pump room, to the north, is the elevator pump room. The plant was installed by the Standard Plunger Elevator Co., 115 Broadway, New York.

There are three pumping engines in this room. These are used to put the water under pressure necessary to operate the machine. (There are eleven elevators in the residence—five passenger elevators

operator, this water under pressure is applied to the plunger, through which medium the car derives its lifting power. The descent of the car is by gravity, and under no condition is it possible for the machine to descend faster than it would in performing its normal service. The plunger in the descent forcing the water into what is called the discharge tank, from there it is taken to the suction pump and re-circulated as above described. Two of these en-

gines are relay machines, only one of the engines being in active operation at the time, when performing the regular service. It is the most expensive machine in the world to be installed, by a very large percentage. It was selected by the owner and architects of this splendid residence primarily because of its absolute safety, and secondly for its low cost of maintenance and operation and its great durability.

Corridor leading to Turkish bath suite in New York residence of Hon. William A. Clark. Photographed by Charles A. Dunlap expressly for "Domestic Engineering."

Ice Plant.

Leading out of the pump room, to the west, is the ice plant, installed by Steel & Condit, Jersey City.

The process is by ammonia gas generated by electric motors. The plant makes one ton of ice per day. There are brine pumps to keep the brine circulating; there are absorption pumps and condenser; there is a large box for freezing caraffes, and for ices. All told, there are seven refrigerating rooms throughout the residence.

Adjoining this room is the engineer's and electrician's office, bedroom, toilet and bath with overhead shower. The wine vault is in the basement There are racks around this vault for bottles and a refrigerator for cooling wines. A dumb waiter in this vault carries the wine to the different breakfast rooms. On the opposite side of this corridor, in the basement, is the elevator for freight. And there is still another refrigerator for fish, each compartment being lined with German silver and white metal. There are three cold storage rooms in the basement, connecting with electric motors; and a china closet.

Turkish Bath Suite.

An ornate mahogany door shuts off the engineering department from the Turkish bath suite.

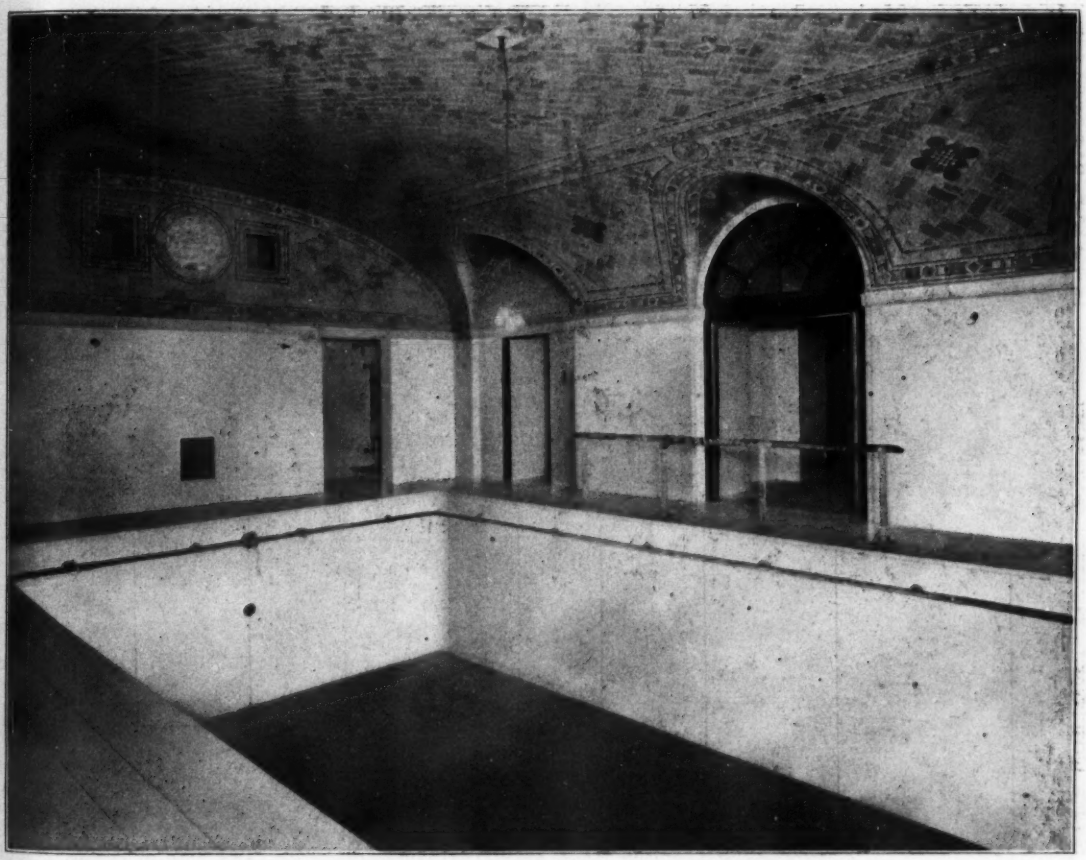
This is undoubtedly the most complete Turkish bath in any private residence in the United States. The vaulted corridor on which the several bath salons open has a ceiling of mosaic set in green tiling. This corridor is 150 feet long. The several bath salons opening into this corridor are as follows: The tepidarium (hot room), calidarium (sweating room), frigidarium (cooling room, a lounging room with marble seats around it), and massage rooms and douche rooms. *Each and every one of these bath salons has floor and walls of Carrara glass, ⅞-inch thick.* Over and above the beauty of it, it is absolutely sanitary and admits of no stain. The apodyterium (undressing room) is a plural force in the Turkish bath suite of the New York residence. There are nine undressing-rooms; these have partitions of solid mahogany. The plunge, or swimming-tank, closes the perspective of the corridor. This plunge is finer than Cicero's in the Tusculum villa, of which the writer has a very valuable picture. The plunge in the New York residence is lined with Carrara glass, is 16 feet broad by 26 feet long, and is 8 feet deep. There is an apparatus for reducing the water to the required height, and there is a continual in-and-out flow of water. The ladders to the plunge are of white metal. Trap-doors in the floor lead to the apparatus controlling the tank. Again here the ceiling is of green tiling set in mosaic and faience. In an alcove whose walls and floor are of Carrara glass, is a needle shower bath, equipped with hot and cold and liver and overhead sprays for use before stepping into the plunge. An elevator descends to this Turkish bath suite entirely shut off from the other sections of the residence. The Carrara glass was put in by the Pittsburgh Plate Glass Co. The mosaic work, done by Heinigke & Bowen, New York city.

The Heating Plant.

The heating of this sumptuous residence is by indirect steam, and a little direct in the servants' quarters on the fifth and sixth floors. The heating

and ventilating plant was installed by Herrmann & Grace, Brooklyn, N. Y. The consulting engineers were Wm. J. Baldwin, M. E. (author of "Baldwin on Heating," etc.) and R. C. Taggart, M. E., World Building, New York.

The heating and ventilating are combined. Exhaust steam is used from the three turbine engines in the dynamo room. The outside air is taken into the ducts (these being covered with cheese-cloth bags) and blown through the air-filters in the seven heating chambers (all in the basement) (see basement plan on pages 108 and 109), heated by the indirect stacks, the flues having connection both above and below these stacks, part of the air being taken from below the indirect stacks and part above, so that the temperature of air in the flue is just enough to maintain the temperature in the rooms at the required heat, say 70°. Each room is controlled separately by thermostatic process. There are 72-inch fans in the attic to draw up the exhaust air from the rooms, each room in each suite having individual registers for heating and for ventilation. The flues, or ducts, in the several seven heating chambers are labelled for each room. All the occupant of the room has to do is to regulate the thermostat in that room, and it takes care of itself, automatically.

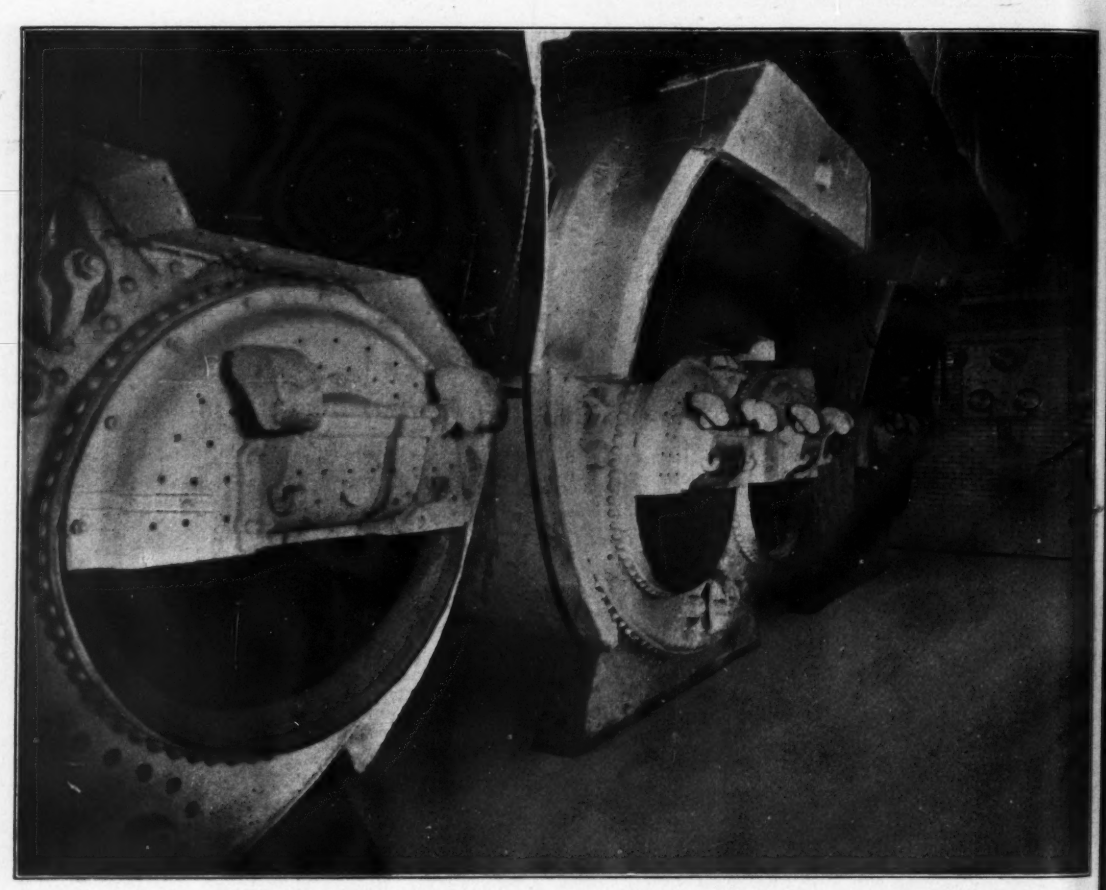


Plunge bath in New York residence of Hon. William A. Clark. Photographed by Charles A. Dunlap expressly for "Domestic Engineering."

The Driveway Court.

Ascending from the basement to the ground floor the stately driveway court (exit for carriages) is perceived, with its palatial bronze gates (the entrance for carriages is nearer the Fifth avenue corner). The driveway court is paved with stone, is adorned with stone (Renaissance) vases and a fountain. The somber and inspiring wing of the second picture gallery and the faience gallery is

to the north of this driveway court. A stairway of Caen stone, with walls of Caen stone, leads up from the faience gallery to the second picture gallery. The molding around the frieze of the stairway is the "egg" pattern, or, *life and death*—old as Plato's musings—a motif which again and again appears in various parts of the residence. The one electric elevator in the building ascends from the faience gallery to the second picture gallery. As



Battery of three Scotch marine 250 h. p. boilers in the New York residence of Hon. William A. Clark. Photographed by Charles A. Dunlap expressly for "Domestic Engineering."

it ascends *it lifts the floor above,* a warning bell indicating its approach.

On the ground floor is the billiard room, the smoking room, a reception room, a waiting-room and a private office. There is a large toilet-room off the smoking room; one off the reception room and one off the private office.

Banqueting Hall.

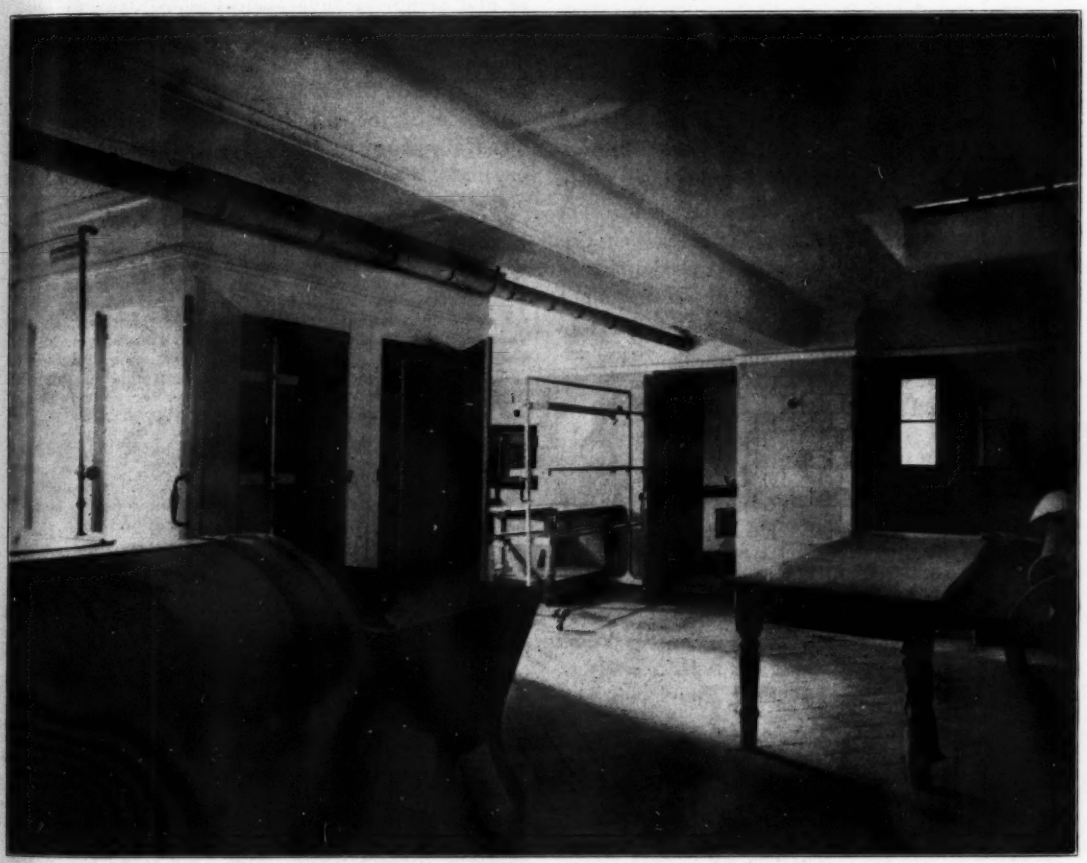
On the first floor, in the lesser of the two pavilions united by the tower (as before described) is the banqueting hall. It leads out of the sculpture hall —east, the reader will remember. What a vista as one stands and gazes! west, across the hall of sculpture to the Louis Quatorze grand salon; north, to the picture gallery; south, to the conservatory; and east to the banqueting hall. The walls of the banqueting hall are of English oak, with an unusually broad frieze *of carved stone.* The fire-place could have come from the building brain of a Cyclops when the world thought in cliffs! The lofty stone chimney-piece is upheld by two pillars—lions carved in stone. And here again see what modern adaptation of home needs to beauty: two ornamental enclosed balconies screen the dumb-waiters that connect with the first serving-gallery (mezzanine) and with the second serving-gallery below the first serving-gallery, the latter leading directly into the kitch-

en, which is on the ground floor. These two serving-galleries are for elaborate banquets. Their floors are of white marble. There is a circular stairway leading down from the banqueting hall to the serving-galleries. In the first serving-gallery there are sinks of copper, with fixtures of silver plate, for the washing of silver and glass. The second serving-gallery has a steam table and hardwood pantries, and sinks of copper, ornate.

fans above the range to draw all odors of cooking to the roof. There are special vegetable sinks, with drain board. Nothing but cooking is done in this room. There are dumb-waiters in the kitchen that communicate directly with the breakfast rooms on the second and third floors, where luncheon will also be served.

The Laundry.

The laundry is on the fifth floor. Everything



Laundry in New York City residence of Hon. William A. Clark. Each machine has an individual motor. Photographed by Charles A. Dunlap expressly for "Domestic Engineering."

The Kitchen.

The kitchen, looking out on Seventy-seventh street, with its big windows—sunlight and ventilation—is a cheerful place for the chef. According to "science," the riant air of this kitchen should affect the menus.

There is a dado of glass all around the kitchen; and the walls are of enameled brick. The range is for gas and electric service; and there are electric

here is done by electricity. What saving of labor and of time! The mangle, starch-boiler, wringer, rinser, washing-machines, driers, have, each, a separate motor. The washing-machines and boilers are all of copper. The (electric) driers are enclosed in a large closet, and run on wheels. In this will be observed economy of space. There is also in this room a large outside drier.

There are servants' quarters on this floor, each

room having steam heat and two windows; three bathrooms with fixtures of porcelain. The housekeeper's suite has bathroom of its own. The butler and steward share a suite that has its bathroom with porcelain fixtures. Again, on the sixth floor of the servants' quarters there is a bathroom.

Rain Water Leaders.

On the roof are twelve leader heads to four main leaders, to take off rain water from the roof. This is on the east end of the building, the lesser pavilion. On the main part of the building there are thirteen leaders on main roof and thirty-five leader heads on these thirteen leaders. The nine soil stacks going through the roof lead from the seventeen bathrooms.

The Bathrooms.

In the family bathrooms and the guests' bathrooms the work is of the most finished kind. The fixtures are from the firm of Meyer-Sniffen Co., New York. The walls of each bathroom are of Carrara glass. The floors are of inlaid tiling. The fixtures are of solid porcelain, the tubs being of "English" and "French" and the "set-in" patterns. The faucets are silver plate, and the towel bars back of the tubs are of silver plate. In some of the bathrooms there are overhead showers; in others, a needle shower set in the corner of the bathroom, with enclosure of milk-white glass, and with silver plated trimmings. The shower receptors are of marble. The night and day nurseries on the fourth floor have their elaborate bathroom with overhead shower. There are two bathrooms to a suite of guest rooms, bedroom and boudoir. The bedrooms are rich in walls of imported English oak; and they have open fireplaces.

A Final Glimpse.

A final glimpse of this magnificent residence, the most elaborate in the United States, gives us the grand staircase of marble with its balustrade of wrought bronze. It ascends in lordly sweep to the first floor, the Louis Quatorze salon. The vista across this impressive salon of the mirrors and the glittering wreaths and roses so dear to Valois kings and to the majesty of Versailles, gives us the corridor of Maryland marble and the perspective to the end of the banqueting hall. If space permitted we should speak of the corridor of black walnut, a splendid smite of contrast against the glittering grand corridor, and which leads into the library. Magnificent is this library in its imported panel work of black walnut carved by hand. The ceiling is a delight; it holds here and there the glints of sunlight, as if out of the great century when "un regard de Louis enfantait des Corneille!" The windows are of fifteenth century glass. We could speak of the music room. We could speak of the enrichment in stone, of the imposing exteror where dormers are upheld by marble Carytides. Undoubtedly, in art circles of the future as in the stair and emulation in the scientific world of domestic sanitation, there will be noble appraisement of this residence of the later French Renaissance, into which its owner and architects have opened every door to modernism in engineering, in electricity and scientific plumbing. *A grande cloche grand son!* Amazing the adaptation of advanced scientific sanitation to a residence of the delightful tang of chateaux that owed allegiance to great kings, a residence where one feels, thankfully, the tranquil ceremonial of the non-strenuous life!

Note: The writer desires to make her acknowledgments to Messrs. Lord, Hewlitt & Hull, architects of the residence of Senator William A. Clark; to Mr. H. Symonds, of the firm of Rossman Company; to the General Electric Company; to the Standard Plunger Elevator Company; to the Vacuum Cleaner Company; to Mr. Wm. J. Baldwin, M. E., and to Mr. Ralph Taggart, M. E., Consulting Engineers; and to Messrs. Rowecroft, Bozman and Ketcham, superintendents of the Senator Clark residence, for courteous aid and permissions in the preparation of this article.

N. B. It may interest the public to know that Senator Clark built his own works out of town, and, for years, has steadily employed four hundred workmen in stone-cutting, wood-carving, etc., for the New York residence. **L. C.**

Cement for Repairing Cracked Castings in Boilers.—The following formula for cement for repairing cracked boiler castings comes from F. M. Collins, a master plumber of Walden, N. Y.: 3 lbs. lime and 1 lb. cracked rice, mixed in a pail of water. Mr. Collins has used the above with success and claims it will stop a leak in any casting and last for years.

Attractive interior, showing establishment of Gustafson & Pribble, 627 Quincy street, Topeka, Kan.

Different Systems of Heating

By Phoenix

Heating by Steam.

A system in which the water of condensation returns to the boiler by gravity, is called **a gravity circulating system.** The different parts which make up the "runs" of this system are called **mains, branches and risers.**

A steam main is a pipe used to carry steam from the boiler to any branch or branches.

A branch is the pipe which carries the steam from the main to the riser; and **the riser** is the pipe which delivers the steam from the branch to the radiator.

Steam jobs may be classified **with regard to their circulation** into one pipe systems and two pipe systems.

The **two pipe system** is the older and was used very extensively many years before the one pipe system came into practice.

In the two pipe system each radiator is supplied with a separate flow and return pipe and there must be a separate flow and return main to the boiler.

In the one pipe system **the radiator is connected by a single pipe** which supplies the steam, and returns the condensation to the riser, branch and main.

These general methods of obtaining a circulation may be divided into many different systems, some of the principal ones in general practice being the following:

1. The two pipe system with wet returns.
2. The overhead system.
3. The one pipe system with dry returns.
4. The circuit system.
5. The divided circuit system.

It is neither reasonable nor just to say which of these different systems is best. Practical men know that different buildings require different treatment,

You will find heating systems classified in this article according to pressure and circulation

and also that a system which would give the most gratifying results in Florida might not pan out well in the Northwest.

I am speaking here with regard **to strict gravity jobs and am not considering at this point any of the many patented systems where force** of any kind **is applied in returning the water to the boiler,** as these particular systems are found, more or less plentifully, everywhere.

The best practical men of the day have generally discarded the two pipe gravity steam system as needlessly expensive and out of date, and most of these systems seen now-a-days were put in many years ago.

The overhead system is somewhat of a combination of the one and two pipe systems and is very convenient in a large building where no pumps or steam traps are to be used and where the cellar is very low. The risers go directly to the attic of the building and branches are taken off at the necessary points to supply the risers **which drop to the radiators.** One drop riser may run directly from attic to cellar, and the radiators are supplied from the side of the drop by means of a tee.

In the one pipe system with dry returns the main pitches away from the highest point, which is directly over the boiler.

The circuit system is used where the boiler is to be placed in one corner of the building and radiators placed upon all four sides, or three of the sides of the building. **This steam main should not be reduced in size on this system.**

The divided circuit system is best used in buildings where the boiler must be located near the center of the cellar. The returns from the ends of the mains should be connected together **below the water line of the boiler.**

With reference to the **amount of pressure carried,** steam heating systems may be classed as:

1. **Low pressure systems,** where the pressure is between atmospheric pressure and ten pounds.
2. **High pressure systems,** where the system is run at a greater pressure than ten pounds.
3. **Vacuum heating systems,** where the system is operated at a less pressure than the atmosphere.

These three divisions, **according to pressure,** are capable of an almost endless amount of different combinations and effects.

The simple gravity return job is generally used where the full boiler pressure is carried on the whole job. This is capable of being modified into a low pressure gravity return vacuum heating apparatus by means of using one of several systems now on the market and intended to meet this demand for low pressure vacuum heat for residences **where an engineer would not be required to run the apparatus.**

High pressure heating is generally employed in large factories and is not generally used in dwellings and blocks.

There are many combinations capable of being formed along the line of high pressure.

While the machinery of certain portions of any large factory may be operated upon high pressure, it is found extremely profitable to utilize the exhaust steam in heating the buildings and this is done in several different ways. The water of condensation may be forced back to the boiler by means of steam pumps or steam return traps, two mechanical appliances regarding the use of which the ordinary steam fitter is in great ignorance.

Vacuum heating is comparatively a new thing and is not generally understood, nevertheless this system is being rapidly developed and improved in all parts of the country and will soon occupy a very important place in the general practice.

A vacuum is a space unoccupied. Atmospheric pressure is the pressure which, at the sea level, is found to be 14.7 pounds per square inch. **On top of a mountain this pressure is much less, per square inch, as the air is thinner.** Also on top of a mountain water boils at a less temperature than it does at the sea level (212° Fahr.).

If we say we have ten pounds pressure on a steam

job, we mean we have ten pounds pressure above the atmosphere. Now this atmospheric pressure is 14.7. Therefore we really have 24.7 pounds pressure on that job. Now if we could get rid of the atmospheric pressure we could boil water at 98° Fahr.

In the simple gravity steam heating jobs the air must be driven out of the job each time before the radiators will thoroughly heat, **and this requires steam to the extent of from one to ten pounds,** and of course the temperature of the water in the boiler is 212° or more, according to the amount of pressure in pounds.

If the air can be removed from the system, **and kept out,** or if the system can be so run as to **prevent the air getting in,** we have a condition whereby we can circulate the steam or vapor in the system, below the atmospheric pressure and can obtain the steam or vapor at a less temperature than 212° Fahr. This is accomplished by several very excellent systems for house heating, advertised in "Domestic Engineering," differing somewhat in principle, by means of which the air is either **forced out** of the system, or is **drawn out,** and the system then operated under a vacuum. It has been found that these systems operate upon a less quantity of coal and give results which are entirely satisfactory.

Hot Water Heating.

Another system of heating which has grown to astonishing proportions is the heating of residences and buildings of moderate height by means of hot water.

During the last two decades this method of heating has increased, probably, ten fold. There are several different systems of hot water heating, which may be divided as follows:

First. The two pipe system.
Second. The one pipe or one main system.
Third. The overhead system.
Fourth. Forced circulation.

The two pipe system is the one best understood for the reason that it is the oldest and has been installed the greatest number of times. It consists of a separate run of supply and return mains, branches and risers and is mostly used on open tank systems and by people who are afraid to venture forth upon different systems. The one pipe system is very similar to the one pipe system of steam heating, except that each radiator must have a supply and return, which may be run into the one main, that carries both the supply and return water, in the same direction. During the past five years various appliances have been placed upon the market for the purpose of creating a pressure upon house heating hot water jobs. There has been much discussion for and against as to the merits of these inventions and many doubts have been expressed as to their usefulness. It seems to have been proven, however, that these inventions possess merit and do increase the circulation; that when placed upon a system possessing a sluggish circulation, they greatly benefit that job, and that by using these appliances we can decrease both the size of the piping and the amount of radiation.

Central Station Heating.

Greatly improved methods are now in use for heating many buildings from a central station, and central station heating by hot water is a permanent practice of today. A great many large jobs of this nature are located in various parts of the United States.

Proposed Sanitary Legislation in Illinois

The last General Assembly of the State of Illinois appointed an industrial commission charged with investigating:

1. Crowding of hazardous and dangerous machinery in places of employment.
2. The maintenance of proper and sufficient sanitary and ventilation systems in places of employment.

This commission consisted of ten persons, of which Edward R. Wright was made chairman and Samuel G. Harper, 134 Monroe street, Chicago, secretary.

Months of careful investigation and study into actual working conditions throughout the state permitted the commission to deal with three general questions as affecting sanitary conditions:

1. Air;
2. Plumbing and drainage;
3. Cleanliness and comfort.

This month the commission has had its report to the Governor transmitted to the present General Assembly, accompanied by a proposed bill "to provide for the health, safety and comfort of employés in factories, mercantile establishments, mills and work shops in Illinois, and to provide for the enforcement thereof." The bill is known as "Senate Bill 385" and was introduced by Mr. Hennison April 7, 1909. From the report we quote:

Air.

"It is, of course, obvious that mere cubic air space is not the vital question in regard to ventilation regulations, although a minimum cubic air space should, undoubtedly, be defined, and this the commission has undertaken to do. The renewal of the air by natural or artificial means is manifestly of first importance. A modern plant of the most perfect type may not greatly exceed the minimum air space, and yet be perfect as to ventilation, while an old plant of very dangerous character may have a great surplus of air space, and still be very unsanitary because of little or no renewal of the air supply. The effect of impure air and unwholesome conditions are not appreciated by a large number of the employés themselves, and a majority of those working in unsanitary and poorly ventilated establishments continue their employment under such conditions without any realization of the constant menace to their life and health in so doing. The effects of unwholesome conditions of employment are so slow and insidious in their development that neither the employer nor the employé is made to realize the extent of the danger, as would be the use in the operation of a dangerous machine.

It is, therefore, imperative that both employer and employé be educated as to the value of pure air and proper sanitation. The proposed bill requires in the absence of sufficient natural ventilation, a minimum flow of pure air, amounting to 1,500 cubic feet hourly

for each employé. Great care has been exercised in drafting this section of the bill, and in the opinion of the commission, the requirements are as reasonable as a proper regard for the health of the employé demands.

Plumbing and Drainage.

"It is obviously difficult to establish for all industries affected by the provisions of the proposed bill, a uniform rule for plumbing and toilet facilities, but the commission desires to emphasize the need for adequate provisions of this sort as being of fundamental hygienic importance, and further to emphasize the manifest propriety of maintaining privacy for each sex. The ratio of closets to employés is somewhat less than is found economically advisable by several managers of large establishments which we visited, but the requirements suggested will afford a large measure of relief as compared with present conditions. The inquiry made as to toilet facilities shows that in many cases toilet rooms are without ventilation or proper plumbing, are dark, in a filthy condition and injurious both to the health and self respect of employés.

Cleanliness and Comfort.

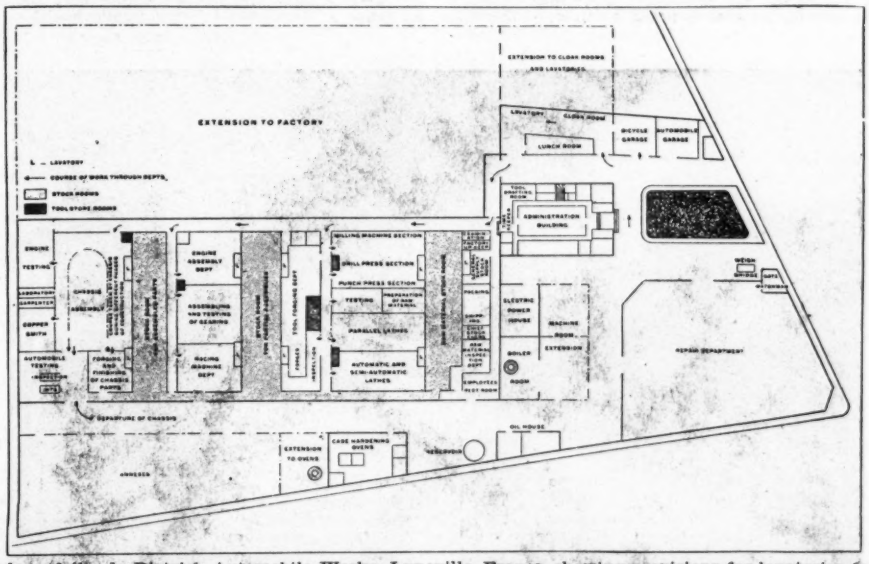
"As to general conditions of cleanliness and comfort, the commission also feels the importance of emphasizing the need of adequate washing facilities. The variety of industries affected by the measure submitted also makes it difficult to establish a general regulation on these points, but the commission is unanimously of the opinion that the better the facilities as to personal cleanliness and general hygienic habits, the higher will be the general standard and morale of the employés."

Provisions in the Bill.

It is not possible for us to give space to the publication of the entire bill and we therefore confine ourselves to the proposed provisions for ventilation and plumbing.

Provisions for Ventilation:

Section 12 of the bill provides:



Ground plan of the de Dietrich Automobile Works, Luneville, France, showing provisions for lavatories for workmen marked with the letter "L"; one off the chassis assembly room, one off the chassis forging room, one off the engine assembly department, one off the racing machine department, two off the tool forging department, one off the drill press section, one off the lathe section, one off the general stock room, one in connection with the lunch room and one in the extension to the cloak rooms and lavatories. It will be noticed that this factory is all on one floor and that lavatories are so arranged that they are available to each section of the working departments with slight travel required to reach them. It is intended that workmen from one department need not leave that department until the day's work is done. The arrows indicate the course of material in process of manufacture; the light shaded portion indicates stock rooms and the cross shaded portion indicates tool store rooms. Plate reproduced through the courtesy of "System."

In every room or apartment of any factory, mercantile establishment, mill or workshop, where one or more persons are employed, at least 500 cubic feet of air space shall be provided for each and every person employed therein, and fresh air, to the amount specified in this act, shall be supplied in such a manner as not to create injurious drafts, nor cause the temperature of any such room or apartment to fall materially below the average temperature maintained: Provided, where lights are used which do not consume oxygen, 250 cubic feet of air space shall be deemed sufficient. All rooms or apartments of any factory, mercantile establishment, mill or workshop, having at least 2,000 cubic feet of air space for each and every person employed in each room or apartment, and having outside windows and doors whose area is at least one-eighth of the total floor area, shall not be required to have artificial means of ventilation; but all such rooms or apartments shall be properly aired before beginning work for the day and during the meal hours. All such rooms, or apartments, having less than 2,000 cubic feet of air space, but more than 500 cubic feet of air space, for each and every person employed therein, and which have outside windows, and doors whose area is at least one-eighth of the floor area, shall be provided with artificial means of ventilation, which shall be in operation when the outside temperature requires the windows to be kept closed, and which shall supply during each working hour at least 1,500 cubic feet of fresh air for each and every person employed therein. All such rooms or apartments, having less than 500 cubic feet of air space for each and every person employed therein, all rooms or apartments having

no outside windows or doors, and all rooms or apartments having less than 2,000 cubic feet of air space for each and every person employed therein, and in which the outside window and door area is less than one-eighth of the floor area, shall be provided with artificial means of ventilation, which will supply during each working hour throughout the year, at least 1,800 cubic feet of fresh air for each and every person employed therein: Provided that the provisions of the preceding portions of this section shall not apply to storage rooms or vaults: And, provided, further, that the preceding portions of this section shall not apply to those rooms or apartments in which manufacturing processes are carried on which from their peculiar nature would be materially interfered with by the provisions of this section. No part of the fresh air supply required by this section shall be taken from any cellar or basement.

The following terms of this section shall be interpreted to mean: The air space available for each person is the total interior volume of a room, expressed in cubic feet, without any deductions for machinery contained therein, divided by the average number of persons employed therein.

of each sex, and plainly marked by which sex they are to be used; and no person or persons shall be allowed to use the closets or privies assigned to the opposite sex; and such water closets or privies shall be constructed in an approved manner and properly enclosed, and at all times kept in a clean and sanitary condition. The closets or privies, where practicable, shall be located so that they shall have direct ventilation with the outside air; where it is impracticable to locate the closets or privies so as to have direct ventilation with the outside air, they shall be placed in an enclosure; and every such closet or privy shall be properly and effectively disinfected and separately ventilated, and shall be properly lighted by artificial light, except when the influx of natural light makes artificial light unnecessary.

Provided, that nothing in this section shall be construed to prevent any city, town or village, by appropriate ordinance or regulation, from prohibiting the construction, use or maintenance in such city, town or village, of any kind of earth closets, or privies, which may be considered a nuisance or detrimental to the public health.

Locker room and wash sink provided for workmen in the de Dietrich Automobile Works, Luneville, France. Each workman has a roomy locker with individual key; wash sink is supplied by continuous flushing pipe on which water is turned during use. Plate reproduced through the courtesy of "System."

Outside windows and doors are those connecting directly with the outside air; the window and door area is the total area of the windows and doors of all outside openings; and the floor area is the total floor area of each room.

Section 13 also has to do with the purity of air in factories:

All factories, mercantile establishments, mills or workshops shall be kept free from any gas or effluvia arising from any sewer, drain, privy or other nuisance on the premises. All poisonous or noxious fumes or gases arising from any process, and all dust of a character injurious to the health of the persons employed, which is created in the course of a manufacturing process, within such factory, mill or workshop, shall be removed, as far as practicable, by either ventilating or exhaust devices.

Plumbing.

The provisions of the bill regulating the installation of plumbing are contained in Sections 21 and 22, which are as follows:

Every factory, mercantile establishment, mill or workshop shall be provided with a sufficient number of water closets, or privies, within reasonable access of the persons employed therein, and such water closets, earth closets or privies shall be supplied in the proportion of at least one (1) to every thirty (30) male persons, and one to every twenty-five (25) female persons; and whenever both male and female persons are employed, said water closets and privies shall be provided separate and apart for the use

In all factories, mercantile establishments, mills or workshops, adequate washing facilities shall be provided for the employes, where necessary, and in such case in all factories, mills and workshops not less than one spigot, basin or receptacle shall be provided for each thirty (30) employes; and in mercantile establishments, not less than one spigot, basin or receptacle shall be provided for each fifty (50) employes. Where the labor performed by the employes is of such a character as to make customary or necessary a change of clothing by the employe, there shall be provided sanitary and suitable dressing room or rooms, and both such dressing rooms and washing facilities shall be separately maintained for each sex.

Provided, that nothing in this Act shall be construed as abrogating or repealing any provision of section 5 of an Act entitled, "An Act to provide for the licensing of plumbers, and to supervise and inspect plumbing," approved June 10, 1897, and in force July 1, 1897, or the provisions of any local ordinance or regulation of any city, town or village, requiring approved and sufficient methods of sanitation, light, heat, drainage or ventilation of an equal or superior standard to that required in this Act.

Help Its Passage.

Every association of heating and ventilating engineers, of master steam and hot water fitters, and of master plumbers, and of every union of journeymen steam and hot water fitters and of journeymen plumbers, should get behind this bill and boost its passage.

Questions and Answers

DETERMINING AMOUNTS OF RADIATION.

130.—Sycamore, Ill.—To the Editor of "Domestic Engineering." Sir: In "Domestic Engineering" for January 2, 1909, I noticed the contribution by John S. Brennan, of Milwaukee, Wis., published in the data sheet No. 19, entitled "Quick Methods for Arriving at Amounts of Direct Radiation for Heating by Steam and Hot Water," for determining the quantity of radiation to be used under certain circumstances. These rules are years and years old, and for small to medium low pressure steam heating installations are substantially correct, as has been demonstrated by past experience. However, Mr. Brennan's rule to "add 10% for every degree below zero" is in error. It should read, "add 1½% to every degree below zero." If you are interested in getting the original source of this data, I can loan you the original copy describing the methods and results obtained, which was sent out to the heating trade in 1892. The accompanying tables give the complete data relating to the subject, which you can use if you wish. Very truly yours,

George M. Tait.

Table giving multipliers for ascertaining square feet of surface required in radiators

External Temp. 0 Fahr.
Internal Temp. 70 Fahr.

INDIRECT RADIATION

Average temperature of water in radiators in degrees Fahr.	Direct radiation	When the quantity of air to be warmed does not exceed three times the quantity of air to be cooled by glass and exposed walls, the	When the quantity of air to be warmed exceeds three times the quantity of air to be cooled by glass and exposed wall, the
Square feet of surface in radiators=total number of cubic feet of air to be warmed, multiplied by			
	Multiplier A	Multiplier B	Multiplier C
140°	.0123	.0155	.0082
150°	.0106	.013	.0072
160°	.0092	.0014	.0064
170°	.0081	.01	.0058
180°	.0072	.009	.0052
190°	.0068	.008	.0047
200°	.0064	.0072	.0043
210°	.0053	.0066	.0034
Steam. 215°	.0055		

For other temperatures see following Table:

Table Showing Relative Proportions of Radiation Surface to Be Used for Securing Different Temperatures in Rooms, With Varying Outside Temperatures.

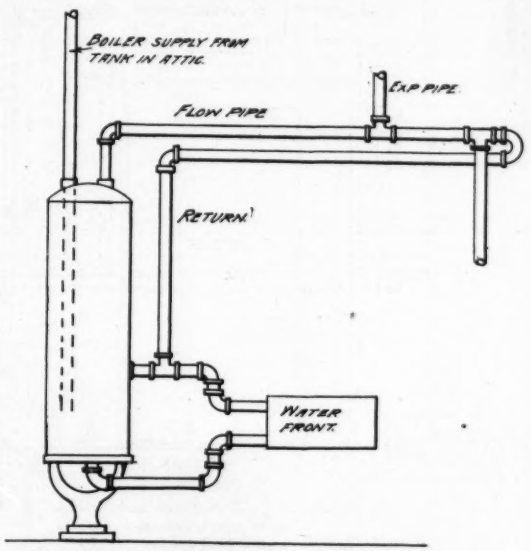
Temperature of external atmosphere.	Temperature of air in rooms, Degrees Fahr. 60°	65°	70°	75°	80°
Fahr. (above)					
30°	.39	.48	.57	.67	.78
25°	.46	.54	.64	.74	.86
20°	.52	.61	.71	.82	.94
15°	.59	.68	.78	.89	1.02
10°	.65	.75	.85	.97	1.09
5°	.72	.82	.92	1.04	1.17
0	.78	.88	1.	1.12	1.25
Fahr. (below)					
5°	.85	.95	1.06	1.19	1.33
10°	.91	1.02	1.13	1.26	1.41
15°	.97	1.09	1.21	1.34	1.48
20°	1.04	1.15	1.28	1.41	1.56
25°	1.11	1.22	1.35	1.49	1.64
30°	1.17	1.29	1.42	1.56	1.71
35°	1.24	1.36	1.49	1.64	1.79
40°	1.30	1.43	1.56	1.71	1.88
45°	1.37	1.5	1.63	1.79	1.95
50°	1.43	1.56	1.7	1.85	2.03

Note to Table: When the quantity of surface required for zero external and 70° internal temperature is ascertained by radiation rule, the surface necessary for other external temperatures varying from 30° above to 50° below zero and internal temperatures varying from 60° to 80° above can be ascertained by decreasing or increasing the surface in the proportion given in above table. Zero externally and 70° internally being unity.

It is not the understanding of the editor of "Domestic Engineering" that John S. Brennan's contribution, entitled "Quick Methods for Arriving at Amounts of Direct Radiation for Heating by Steam and Hot Water," is original material. Heating engineers have found that certain information may be considered reliable in every-day practice and this information they have, to a certain extent, made their own by years of use and in giving this information out to others they simply add the value of their experience to the original discovery and pass it along for the benefit of all. We are quite sure that Mr. Brennan should not be charged with having appropriated the information of any other engineer.

WHAT IS THE DIFFICULTY WITH THE CONNECTIONS OF THIS RANGE BOILER?

148. Syracuse, N. Y.—To the Editor of "Domestic Engineering." Sir: I desire to ask if the circulating pipe on enclosed sketch will work and also the cause of so much dirt in the water. **C. F.**

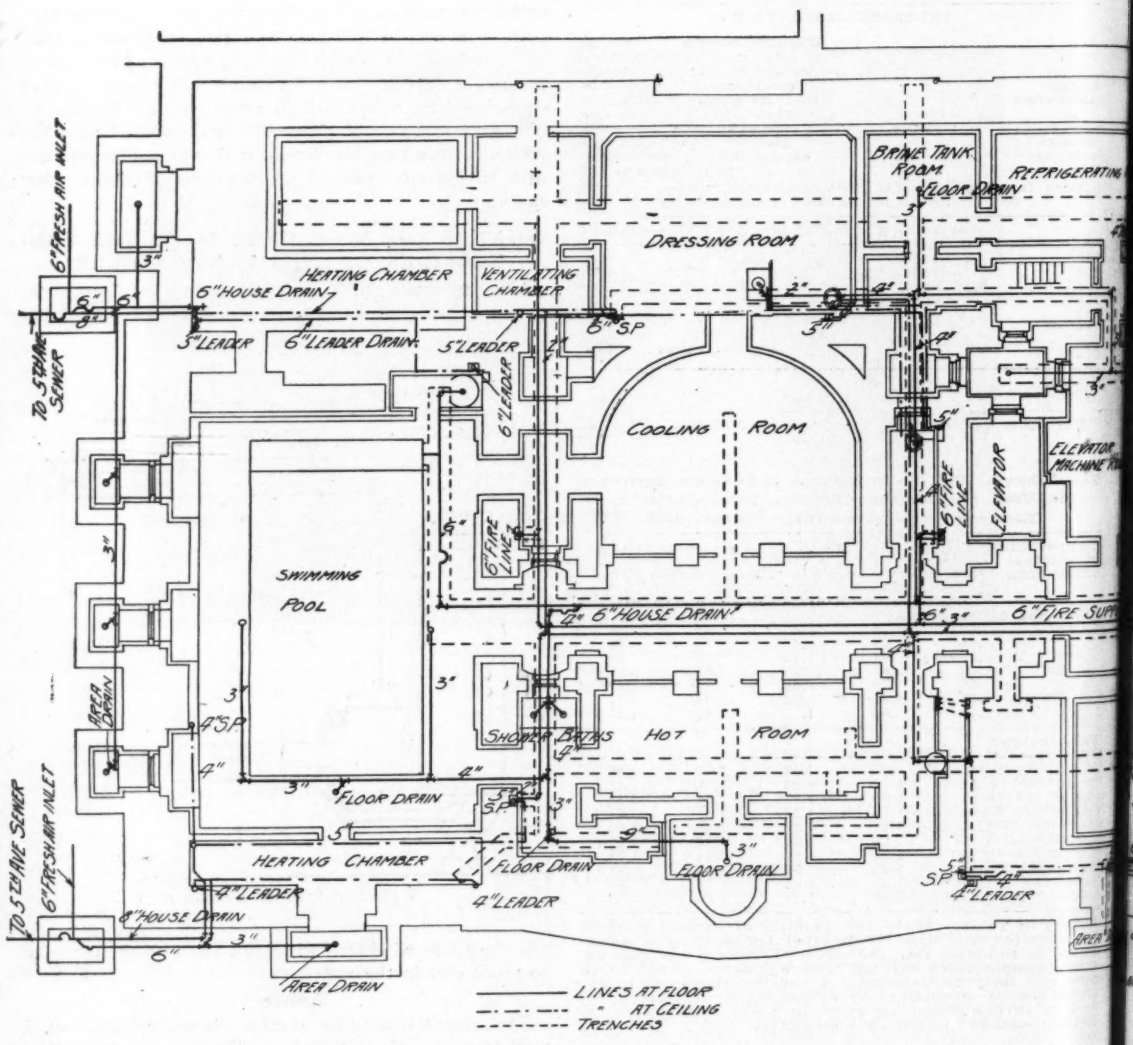


Difficulty with circulating pipe.

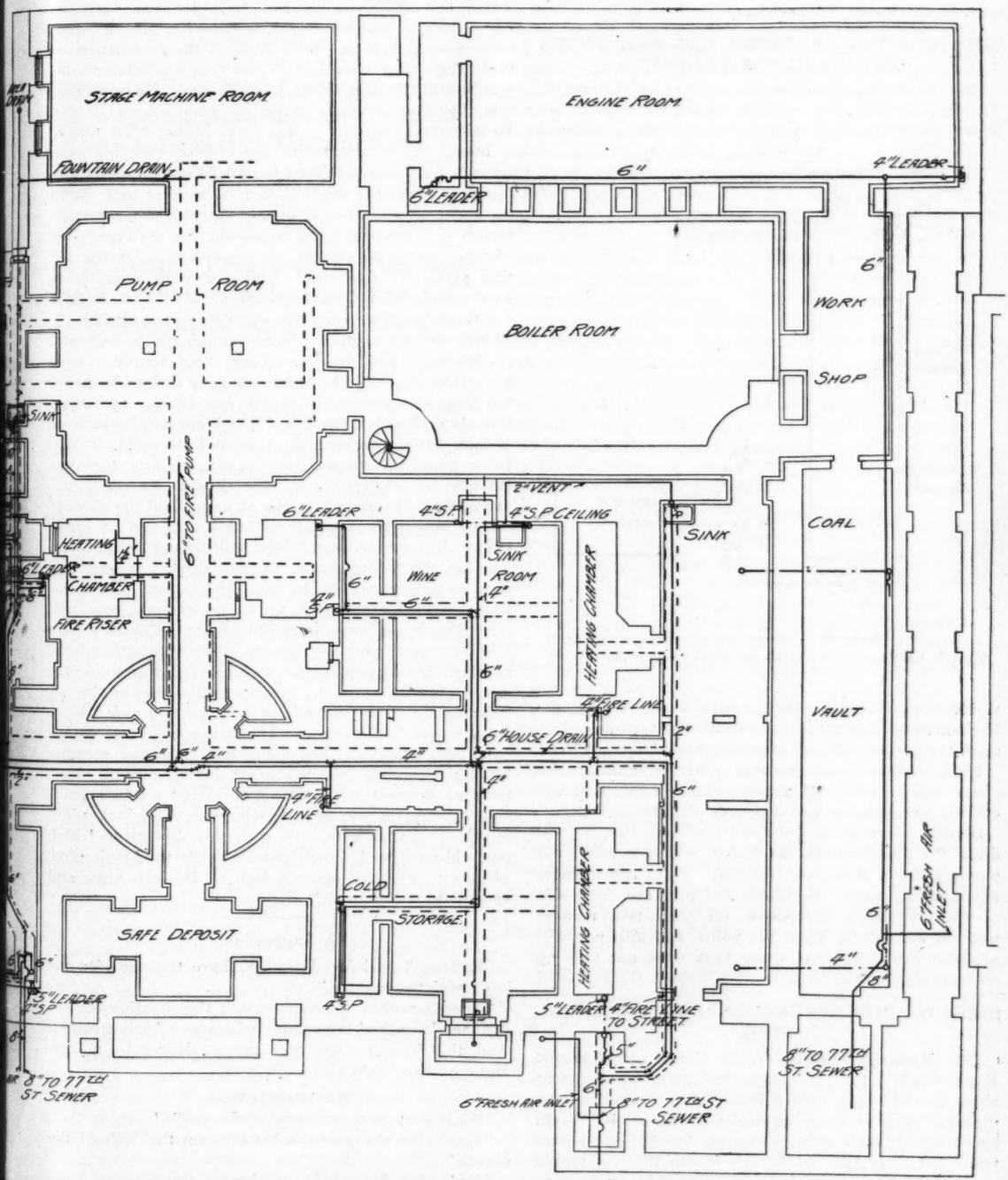
Answer.

The circulating pipe pitches down, which would tend to pocket air at the elbow directly over the boiler. The expansion pipe should be located at this point. The return should not connect into the flow pipe which connects the water front with the range boiler, but should be connected into a tee directly under the boiler. A draw off cock should be placed somewhere

(Continued on page 110)



Basement plumbing plan of residence of Hon. Wm. A. Clark, New York City. Redrawn from original



Hewlett & Hull, architects. Rossman Company, plumbers.

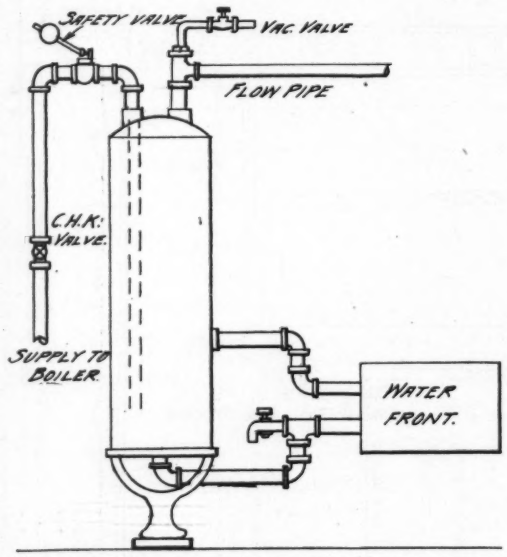
See leading article on pages 92 to 102.

(Continued from page 110)

in this lower pipe to provide means for emptying the boiler at frequent intervals, which would do away with so much dirt in the water.

WHY DID THE PLUMBER USE ALL THESE UNCALLED-FOR VALVES?

150. Louisville, Ky.—To the Editor of "Domestic Engineering." Sir: The water front and pipes under my boiler very frequently stop up and I am sometimes



Sketch showing location of uncalled-for valves.

troubled by an unnecessary supply of water upon the kitchen floor, due to the action of the various valves upon the system. Please suggest a remedy. **G. N.**

First: Have some reliable plumber remove the check valve, safety valve and vacuum valve that are entirely unnecessary and add only that much expense.

Second: Locate a draw off cock so that it will drain the pipe beneath the boiler, which it could not possibly do as it is now installed. Place a tee where either ell is, below the boiler and into the open side of the tee screw the draw off. In this manner you will be able to drain the boiler and also you will probably find that your water back does not stop up so frequently.

SIZES OF PIPE WRENCHES USED ON SMALL PIPE.

138. Knoxville, Tenn.—To the Editor of "Domestic Engineering." Sir: We have had quite an argument about the size pipe wrench that should be used on the different size of pipes to make a tight job. I am speaking of the ordinary Crane fittings—or others taken out of regular stock. I contend that for piping up to ½-inch or ¾-inch pipe that a 10-inch Stillson is the proper one to use; and to use a larger one on ½-inch pipe only tends to strain or burst the ordinary fitting. Even the beaded fittings too often burst and have to be thrown away. I believe that a fitting to be tight should be screwed up only until it is what we call "up"—or tight—then to stop whether the threads are up to the shoulder or not. Of course, all fittings do not screw up the same distance. One of my workmen insists that you have to use a large wrench—which he so often does to the destruction of the fitting. For instance, a 12-inch, or too often an 18-inch wrench, to screw up ½-inch pipe. He says that you cannot screw up a fitting too tight. I find if you do it bursts. Now, if it is a good fitting, what makes it burst? How are we to know if such is the case when to stop before it does burst? What do the manufacturers make the small 10-inch or smaller for? Why not make all wrenches 12-inch or larger? That the different size wrenches are made for the different size of pipes stands to reason, viz.: use the sizes made for that particular size pipe. Please give us your views on the subject and greatly oblige, **C. B. E.**

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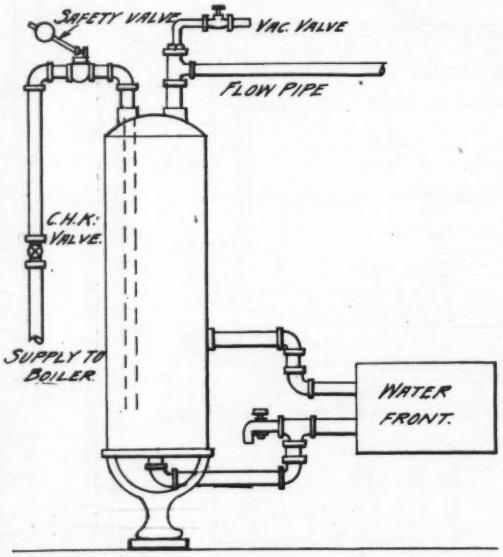
(Continued from page 110)

in this lower pipe to provide means for emptying the boiler at frequent intervals, which would do away with so much dirt in the water.

WHY DID THE PLUMBER USE ALL THESE UNCALLED-FOR VALVES?

150. Louisville, Ky.—To the Editor of "Domestic Engineering." Sir: The water front and pipes under my boiler very frequently stop up and I am sometimes



Sketch showing location of uncalled-for valves.

troubled by an unnecessary supply of water upon the kitchen floor, due to the action of the various valves upon the system. Please suggest a remedy. **G. N.**

First: Have some reliable plumber remove the check valve, safety valve and vacuum valve that are entirely unnecessary and add only that much expense.

Second: Locate a draw off cock so that it will drain the pipe beneath the boiler, which it could not possibly do as it is now installed. Place a tee where either ell is, below the boiler and into the open side of the tee screw the draw off. In this manner you will be able to drain the boiler and also you will probably find that your water back does not stop up so frequently.

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Longnecker. The company has secured a lease for a number of years on the entire large building at the above address, comprising a floor space of more than 10,000 feet. The structure has been remodeled inside and especially fitted up for the use of its new occupants and will be ready for occupancy by May 1, when the new stock of the company is expected to arrive. The month of May will be largely consumed in receiving and placing consignments of goods so that actual business will perhaps be delayed until about the 1st of June, when it is expected that all details will have been worked out and the company ready to get down to business in earnest. At a meeting of the interested parties recently held in Toledo the details of the organization were worked out and the following officers chosen for the ensuing year: President, F. F. Borchard; vice president, F. M. Peabody; secretary, O. W. Holmes; treasurer, W. F. Roemer. President Borchard was for a long time connected with the Quinn Supply Co., of Kalamazoo, Mich., and Treasurer W. H. Roemer was for years connected with James B. Clow & Sons of Chicago.

CHANCE FOR PACIFIC COAST REPRESENTATION.

The President of "Domestic Engineering" knows of a manufacturers' agent in San Francisco, Cal., who would like to secure one or two more strong lines in plumbing supplies. Manufacturers desiring to correspond with him can obtain his name and address on application to the president of "Domestic Engineering."

CROWN BRASS CREDITORS TO MEET.

The creditors of the Crown Brass Co., of Cleveland, Ohio, have been notified by Harold Remington, referee in bankruptcy, that an application to sell the assets of the firm had been filed and hearing upon application will be held before him on Friday, April 30.

WILL MEET IN INDIANAPOLIS.

The semi-annual meeting of the American Society of Heating and Ventilating Engineers will be held on Thursday and Friday, July 15 and 16, in Indianapolis, Ind. At the recent meeting of the board of governors, held at the Grand Hotel, New York City, when the decision was reached, four junior members were advanced to full membership. The board has before it thirty applications for membership. Notice of hotel accommodations at Indianapolis will be issued by Secretary Mackay later.

J. H. MANNY CALLED BY DEATH.

James H. Manny, formerly manager of the Chicago office of the Boynton Furnace Company, passed on at his home in Rogers Park, Chicago, on Wednesday, April 21, after a long illness. He was born in Orange county, N. Y., and came to Chicago in 1863.

FEDERAL FURNACE LEAGUE INVITES.

The Federal Furnace League will hold its next general meeting at the Hotel Malborough-Blenheim, Atlantic City, N. J., on Monday, May 10, and the League, by its secretary, Wilson Ferguson, of Mint arcade, Philadelphia, extends a cordial invitation to heating engineers, installers of warm air heating plants, architects and others interested in warm air heating.

ENLARGE OFFICES AND SHOWROOMS.

Northern Syndicate is now nicely located in its new offices and show rooms on the street floor at 213 Randolph street, Chicago. The additional space recently acquired is mostly utilized for displaying its heating devices, which are tastefully arranged.

KNIGHT & JILLSON CO. REPORTED SOLD.

It is generally understood that Crane Co. of Chicago has purchased the business of the Knight & Jillson Co. of Indianapolis, Ind., and that the change in ownership will take place June 1, when, it is said, Mr. Jillson will retire from business. Both companies referred to refuse to make any statement for publication.

Personal

E. L. Dawes, general manager of factories of the Standard Sanitary Mfg. Co., Pittsburg, Pa., was in Chicago this week. Mrs. Dawes accompanied him.

Joseph Mayer of Hirshfield & Mayer, Boston, Mass., was a visitor to the New York trade last week and incidentally attended the opening at the Polo grounds.

H. R. Boynton, president of the plumbing supply company bearing his name, at Los Angeles, Cal., was in Chicago this week and called on some of his friends in the trade.

Amby J. Buckley, manufacturers' agent at San Francisco, Cal., was in Chicago this week on his way east on his annual visit to the manufacturers whom he represents on the Pacific coast.

George P. Jacobs, of the plumbing supply house in Brooklyn, N. Y., which bears his name, left the city a few weeks ago for a tour of the Southern states. When last heard from he was in South Carolina.

John Trainor, of Baltimore, Md., member of the board of directors of the National Association of Master Plumbers, was recently elected president of the Inter-State Builders and Traders Association of Baltimore and Washington, D. C.

Theodore Ahrens, president of the Standard Sanitary Mfg. Co. of Pittsburg, was in Chicago this week, together with his daughter. His many friends will be glad to hear that Mr. Ahrens's health is very much restored, so that he will probably remain in the east.

E. H. Roberts, of the Roberts Heating and Ventilating Company, Minneapolis, Minn., is on a six weeks' jaunt throughout the West and Northwest. He will visit, combining business with pleasure, the cities of Winnipeg, Spokane, Tacoma, Seattle, Portland, Salt Lake City, Boise and Denver.

J. C. Pearson, president of the Brock Wrench Manufacturing Company, 18 Dey street, New York, returned recently from an extended business trip through the Middle West, going as far as Denver. Mr. Pearson reports business good in the entire Midde West section with a lively demand for pipe fitters' tools. Also that his company's business on its new chain pipe wrench increased last year 15% over the previous year, due largely to its improved construction.

THE STEEL CITY'S HOSPITALITY

W. L. Rodgers, the veteran entertainer, has the money for the greatest blow-out in the history of the associations. Free banquets, theaters, et cetera, et cetera, on the list

Secretary Anderson outlines the policy of the coming meeting and gives the members of his association mental food to digest that should also be powerful enough to even match their pocketbooks

The grandest time furnished all who attend the big meeting

Word has reached us from Pittsburg that the coming joint convention of The National Supply and Machinery Dealers' Association and The American Supply and Manufacturers' Association will be a record breaker. In fact, it is said that the veteran entertainer, **W. L. Rodgers and committee propose to give the visiting members and their guests the time of their life,** without a cent of expense. Money has been pouring in from the business men of Pittsburg, and it is rumored that in addition to an elaborate free banquet they propose to rent an entire theater for their guests in addition to other expensive entertainments. Whether the above is absolutely correct or not, it is known that they have collected a large lot of money, and anybody who has been in touch with Pittsburg life knows that they are not slow in entertaining with a lavish hand, in the world's city of steel. In addition to the above wireless from Pittsburg, the following letter from headquarters at Cleveland also indicates that **Secretary Anderson is conducting a campaign of education** that is bound to touch the mental receptacle of every member of The National Supply and Machinery Dealers' Association and lean right hard on his pocketbook. There is no denying the fact that these associations are stirred to their depths over business situations and problems, and some drastic action may be anticipated at the coming meeting. The utterances of the American Supply and Manufacturers' Association through its committee at the New York meeing in January also indicate that a stand will be taken by both associations, on a common platform, that will have a far-reaching effect upon the business interests of those connected with these lines. Secretary Anderson's letter reads as follows:

"Gentlemen: I am directed by the officers of The National Supply and Machinery Dealers' Association to invite you to send a representative to the annual meeting to be held at the Fort Pitt Hotel, Pittsburg, Pa., May 12, 13 and 14, 1909. At the same time and place The American Supply and Machinery Manufacturers' Association will hold its annual meeting. Among them are the leaders in their respective lines of manufacturers and dealers identified with both associations. A large number have signified their intention to be present, and this opportunity to meet them, and others as well, in the greatest iron and steel center in the world will amply repay you for the time and expense involved. The Manufacturers' Association has declared in favor of certain reforms in selling methods, and their careful consideration by every influential dealer in supplies and machinery is important. You will subserve your best interests by accepting our invitation to be represented. To modify existing relations between the manufacturers and distributors it is necessary that a sufficient number of manufacturers be in accord to undertake any proposed change. The leading dealers of the country approve a change and are willing to carry it out. There is no better way to reach an intelligent conclusion than for the representatives of those interested to meet and 'talk it over.' Concentration and co-operation is the trend of the present day. To be indifferent regarding these tendencies is to invite more complicated problems with their attendant losses. To attempt to intelligently direct the currents of trade is the part of wisdom. We urge your co-operation and ask you to typewrite the name of your representative, together with the name of your firm or corporation, upon the enclosed card and mail it to this office. An identification badge will be prepared admitting him to all the sessions. Yours very truly. **A. T. Anderson,** secretary-treasurer."

EXPECTS LARGE CONVENTION AT CHATTANOOGA.

Alvin M. Smith, secretary-treasurer of the Southern Supply & Machinery Dealers' Association, under date of April 19, writes: "We expect a very large attendance at the joint convention in Chattanooga, Tenn., on May 5, 6 and 7, as over 80 per cent of the members of the Southern Association have already expressed their intention of being present, and I have been informed by F. D. Mitchell, secretary-treasurer of the American Association, that a very large attendance of their members is expected also. **The establishment of proper re-sale prices on wrought pipe and leather belting are two of the largest issues that will be brought up at this convention, and all of the jobbers and manufacturers are very much interested in placing these two commodities on a profitable basis, and we have great hopes of bringing about the desired results at this meeting.**

CONSUMPTION OF COPPER INCREASING ABROAD

Producers of Copper, Pig Iron and Lead Anticipate Higher Prices

New York Metal Market, April 20.

Copper, Prime, Lake	$13.00
Copper, Lake, Arsenical brand	12.80
Copper, Electrolytic	12.65
Antimony, Cookson's	8.25
Lead	4.25
Straits Tin	29.22
Spelter	5.10

Chicago Iron Market, April 20.

Southern, No. 2, Foundry	$15.35-15.85
Northern, No. 2, Foundry	16.50-17.00
Lake Superior Charcoal	19.50-20.00

April 22, 1909:

Foundry iron was the same price as the week previous
$1.00 less per ton than the year previous
Copper was the same price as the month previous
the same price as the year previous
12½c per lb. less than 2 years previous

METAL OUTLOOK BRIGHTER.

Boston, Mass.—Moderate improvement in the metal markets, both foreign and domestic, is reported this week. Electrical business is improving, and with the increasing demand for copper for building trolley lines and the electrification of railroads it is thought that great impetus will be given the copper industry when business conditions approach the normal. Consumption of copper is increasing under what are regarded as adverse conditions. It is believed that when the tariff question is settled the metal industry will improve very rapidly. Trade in western and northern Europe is exhibiting a larger gain in consumption of metals than other parts of the world. Great Britain and Germany are fairly well occupied with business for the production of metal goods that must be shipped by July 1 to Asia, Africa and South America. Domestic exports of crude, semi-manufactured and manufactured metals are improving. Metal producers and consumers in this market predict higher prices for pig iron, steel, copper, lead, spelter and zinc within a few days.

Sioux Falls, S. D.—Bert A. Shaw, plumber, has filed a voluntary petition in bankruptcy, claiming liabilities of $6,526; assets, $4,973.

Oklahoma City, Okla.—C. D. Andrews has been appointed receiver for the Vegiard Plumbing and Electrical Company, whose liabilities are said to amount to $6,262, while its assets are in the neighborhood of $3,000.

Public Comfort Stations

WANTS TO RENT ALL STATIONS.

The following communication to the Board of Aldermen of New York City is interesting, primarily because of the value of the concession as it is seen by the Greek, who is probably in the shoe shining business, and secondly because of the interesting character of Mr. Dimaras' communication:

"Petition For Hire the all the Lavatories from the City New York for $30,000 for Ten years—
"To the next meeting of the Board of Aldermen of the New York City:
"I the Constantinos Theemaras or Dimaras and Company of Boston Mass willing to pay to the City of New York $30,000 for Ten years on the cound of each Month pay advance with that condition any person wish to use the lavatory must pay one cent to three, and sell cigars, newspaper, fruit, candies and make shoes shanes. Father more we willing pay the employees to kept clean the lavatories, and, another condition, we willing to be get a contract to Building more Lavatories ane plase are necessary.
"Constantinos Theemaras or Dimaras,
"43 Curve St Boston Mass."

THE NEED OF COMFORT STATIONS.

Minneapolis, Minn.—Civic improvements formed the most important subject before the Minneapolis Architectural Club, at its recent exhibit in this city. Lecturers on the subject pointed out **the need of public baths and comfort stations.** Among the prominent speakers on the subject was John Nolan, architect, of Cambridge, Mass., who is now engaged in beautifying and improving the city of Madison, Wis. He bore upon the fact that city parks were more for children than adults and earnestly advocated the establishment of municipal baths and swimming pools.

CONVENTION DATES.

April 26, 27 and 28.—Annual convention of the **Associated Masters Plumbers of Texas** at Dallas.

May 5, 6 and 7, 1909.—**Joint convention of the Southern Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association,** at Chattanooga, Tenn. **Headquarters at Hotel Patten.**

May 10, 1909.—General meeting of **The Federal Furnace League** at Atlantic City, N. J. Headquarters at Hotel Marlborough-Blenheim.

May 12, 13 and 14, 1909.—**Joint convention of the American Supply and Machinery Manufacturers' Association and the National Supply and Machinery Dealers' Association,** at Pittsburg, Pa. **Headquarters at the Fort Pitt Hotel.**

May 12, 1909.—Eighth annual convention of the **New Jersey Master Plumbers' Association,** at Jersey City, N. J. The sessions will be held in the Columbian Club building.

May 12, 1909.—Annual convention of the **Connecticut State Association of Master Plumbers,** at Bridgeport, Conn.

June 14 and 15, 1909.—Joint meeting of the **Central Supply Association** and the **Eastern Supply Association.** The meeting will probably be held at Atlantic City, N. J.

June 22, 23 and 24, 1909.—The twenty-seventh annual convention of the National Association of Master Plumbers, at Detroit, Mich.

July 15 and 16, 1909.—Summer meeting of the **American Society of Heating and Ventilating Engineers,** at Indianapolis, Ind.

PLUMBING INSPECTION ADVANCES EAST AND WEST

Green Bay, Wis., and Fredonia, N. Y. Inaugurate Plumbing Inspection

Canton, Ohio, Master Plumbers to Equip their Establishments with Smoke Test Machines

GREEN BAY HAS PLUMBING INSPECTOR.

Green Bay, Wis.—A plumbing ordinance has been passed by the common council, after a long fight. Charles E. Madden has been appointed plumbing inspector and he has allayed the fears openly expressed by members of the council, that the effect of such an ordinance would be to greatly increase the charges by the plumbers. Green Bay now is in line with all of the largest cities of Wisconsin in having its plumbing work under rigid inspection.

FREDONIA TO HAVE PLUMBING INSPECTION.

Fredonia, N. Y.—The matter of examining and licensing plumbers, and inspection of all plumbing hereafter done, was provided for by the Fredonia trustees this week. A board is to be established, consisting of the president and clerk, one village trustee, one member board of health, and one competent outside plumber, to make all necessary arrangements. An examination will be held soon, and an inspector appointed.

PLUMBERS TO USE SMOKE TEST MACHINES.

Canton, O.—Smoke tests by machines applied to plumbing installed for the purpose by Plumbing Inspector Coffman were witnessed at the city hall here recently. The Inspector states that all shops must be equipped with the machines after the masters have received sufficient instructions.

RESIGNS PENDING INVESTIGATION.

Chicago, Ill.—Pending an investigation regarding the charge of having accepted a $50 bribe from George Haney, Hugh H. Smith has resigned his position on the board of plumber examiners in this city. Smith's case was called in the Harrison street branch of the Municipal Court last Saturday, when he obtained a continuance until today, April 24.

"OPEN SHOP" CAUSES CONTROVERSY.

Des Moines, Iowa.—On May 12 the agreement between the journeymen plumbers of this city and their employers expires, and it is reported that the journeymen have prepared an increased scale of wages which they will submit at that time. It is said that the journeymen desire a flat scale of $5.00 per day, and do not desire to continue work under a sliding scale. The journeymen stand for arbitration upon the subject of the open shop, their object being to bring about such a condition that union men and non-union men will not be obliged to work together on the same building. It is expected that the journeymen and masters may meet and that a satisfactory arrangement may be affected.

Who's Who in America—XIII

Alfred I. Laing, manager of the New York office and warehouse of the Humphryes Mfg. Co., of Mansfield, Ohio, was born in Plainfield, N. J., April 11, 1867, and obtained his education in the public school at South Plainfield, the State Normal College at Trenton and at the Stewart Business College, at Trenton, from which latter institution he graduated in 1889. In 1893 he obtained a position as bookkeeper with the Keystone Pottery Company, at Trenton, N. J. The following year he advanced to the position of salesman and was shortly after appointed manager of the office, a position he held until 1902, when new executive heads took charge of the business and relieved him of his duties. He continued his connection with the pottery business in the service of the Brian Pottery Company until March, 1905, when he became associated with the Humphryes Mfg. Company as salesman. On April 1, 1906, he was appointed manager of its New York office, and on November 1st of that year he opened the company's present warehouse at 636-638 West 34th street, retaining his position as manager and covering the territory bounded by the Atlantic ocean, Portland, Buffalo and Richmond. In politics Mr. Laing is a republican, and his interest in church matters is evidenced by his membership in the Presbyterian denomination. He also is interested in fraternal organizations, being a member of the United Commercial Travelers' National Union and the Free and Accepted Masons. He is married, and resides at 64 Fairview avenue, Plainfield, N. J.

WILL MEET IN BRIDGEPORT.

Bridgeport, Conn.—The Connecticut State Association of Master Plumbers will hold its annual convention in this city on Wednesday, May 12, 1909.

ATTRACTIVE PROGRAM ARRANGED.

Wilkes-Barre, Pa.—The date of the fifteenth annual convention of the **Pennsylvania State Association of Master Plumbers** has been changed from May 18-19 to Tuesday and Wednesday, May 11 and 12, and the meeting will be held in this city, with headquarters at Hotel Redington. The program arranged is as follows: May 11; 10 a. m.—Convention called to order; 12:30, photograph of delegates and friends on the steps of Luzerne county courthouse. In the evening a theater party. May 12—Last session of the convention. At 1:30 p. m. a trip over the electric railroad to the great summer resort of northeastern Pennsylvania, Harvey's Lake, where boating, fishing and other amusements will be indulged in. A dinner will be served in the evening at the lake at Hotel Oneonta.

Portion of a showroom for the display of lavatories by the Virginia-Carolina Supply Co., jobbers of plumbing and heating supplies, at 79-83 Commerce St., Norfolk, Va. **See also illustration on page 122 in this issue.**

NORTH HUDSON ASSOCIATION'S ANNUAL BANQUET.

Union Hill, N. J.—The long delayed annual prize bowling and banquet of the North Hudson Association of Master Plumbers was held Saturday, April 17, at the old stand-by, W. C. Franz's Cafe, on Bergenline avenue. The event, generally celebrated on Washington's birthday eve, was thought by many to have been forgotten this year, but the regular committee was appointed at the eleventh hour and quietly arranged things for the big night. All afternoon the plumbers were busy at the alleys breaking records of previous years. A feature of this year's event was the twenty-seven prizes donated by manufacturers of and jobbers in plumbing supplies. So anxious were the bowlers to secure one of these trophies that it was near 11 p. m. when the call to the banquet hall was heard. Upon entering each was in turn presented with a real English bull by Glauber Brass Manufacturing Co., a pocket note-book by the Trenton Potteries Co., a watch fob by H. Mueller Manufacturing Co., and a card and memo case by Thos. Maddock & Sons. **Former President Louis Menegaux acted as toastmaster,** and on account of the lateness of the hour deviated from the usual custom and addressed his audience before the oysters were served. He said the association at first did not intend to hold the annual dinner this year, but the president received so many demands from members that the regular committee was appointed at the last minute, the members of which he congratulated upon the good work they had done in so short a time. He also thanked the manufacturers and supply houses for their hearty co-operation in making the affair the success it was. After the applause had subsided the orchestra struck up and thereafter, between courses, the vaudeville artists in attendance entertained the diners until the close. During the evening George E. Heim of the United Lead Co., a baritone who would make Plancon, of Metropolitan Opera fame, green with envy, led the plumbers through the mysteries of Wagner, Beethoven and Litzt.

Chicago, Ill.—W. W. Petrie has been appointed plumbing inspector on the force of the health department of the city. Mr. Petrie is treasurer of the Chicago Association of Journeyman Plumbers.

Northwestern Master Plumbers Meet at Cambridge Springs, Pa.

Cambridge Springs, Pa.—The nineteenth annual convention and banquet of the Northwestern Master Plumbers' Association, in accordance with the custom of past years, was again held this year at the Hotel Rider, in this city, on Thursday, April 15. This association, as is well known, is one of the strongest district organizations of master plumbers in the country, and in addition to holding the annual meetings at Cambridge Springs, holds regular monthly meetings in various cities and towns where the association is represented.

The attendance this year was rather small, but this was attributed to the fact that many of the members of this association propose attending the annual meeting next month at Wilkes-Barre, Pa., and that owing to the nearness of the two dates many members felt that they were not justified in attending both conventions. What was lost this year in numbers was more than made up in enthusiasm, however, and the convention was at the same time one of the most enjoyable and most enthusiastic that has ever been held since the formation of the association.

Another feature that tended largely to the success of the meeting was the large number of ladies present, there being nearly as many members of the fairer sex as members of the association. This has always been one of the enjoyable features of the annual meetings, and many of them are in regular attendance year after year, looking forward eagerly to the banquet, dance and other social features for months beforehand.

The First Arrivals.

The first of the delegates arrived on Wednesday afternoon, all of these being regular attendants at the conventions, and including such well known personages as H. P. Cahill and wife and C. W. Hoffman and wife, all of Akron, Ohio; A. C. Eynon and wife, of Canton, Ohio; W. J. Scholl and wife, of Youngstown, Ohio, and James Smith and wife, of Pittsburgh. M. C. Judd, secretary of the association came over from Meadville by trolley on Wednesday evening.

The majority of the members arrived in parties and groups of from three or four to a score on Thursday morning, however, and by noon nearly all of the members were present. The early arrivals on Thursday morning formed parties and planned trips and excursions to the various places of interest around the springs and around the town. Other trips were arranged for the afternoon, and no one found time hanging heavily on their hands. Some of the members' wives and daughters arrived early in the afternoon, joining those already at the hotel.

The delegation that arrived on Thursday morning **from Jamestown, N. Y.**, deserves more than ordinary mention, for while there are not over one-half as many members there as there are in several other cities and towns represented in the association, this delegation was over twice as large as that from any other city, a fact that reflects much credit on the loyalty of the Jamestown members. There were nearly thirty people in this party, fully half of whom were ladies.

Business Session.

The business session was called to order by **President Charles F. Kist,** of Youngstown, O., in the Rider Theatre, at 1 o'clock Thursday afternoon. The sessions of the convention, as is always the case, were executive, and exclusively for the members in good standing. The roll call showed the following members and firms which are members present:

Akron, O.—H. P. Cahill and C. W. Hoffman.

Canton, O.—A. C. Eynon.

Cambridge Springs, Pa.—The Home Hardware & Plumbing Company.

Erie, Pa.—Frederick L. Albracht, Boettiger & Company, Frederick J. Miller, George B. McIntire, R. P. McKay, McKay Plumbing & Heating Company, E. W. Henderson, Oscar H. Nick and C. A. Stevens.

Greenville, Pa.—J. A. Kamerer & Company, J. A. Kamerer, the Greenville Plumbing & Heating Company, Leroy R. Stone, Harry S. Stuart and Thomas Stone.

Jamestown, N. Y.—Chatfield & Armitage, G. A. Chatfield, James Davey, M. J. Murray & Company, M. J. Murray, John Heald, John McGinity, Amel Johnson, A. A. Stewart, Jonas Woodhead, Frank M. Stearns, James Trainor, J. T. Marsh and Con T. Marsh.

Meadville, Pa.—Graham & McClintock, P. B. Graham, M. C. Judd and L. L. Lord.

Oil City, Pa.—James M. Reidy, Frank D. McCue and R. T. Lord.

Sharon, Pa.—James Stott.

Warren, Pa.—Schellhammer & Son and A. L. Schellhammer.

Warren, O.—Smith & Childs, H. S. Smith and the Warren Plumbing & Heating Company.

Youngstown, O.—Kist Brothers, Charles F. Kist, the W. J. Scholl Company, W. J. Scholl and C. W. Wilson.

There was a total voting membership of 41 persons present, which is the smallest that has attended the annual meeting for some years. The business that was transacted this year was merely routine, and no questions of importance were brought before the association and discussed, as has frequently been the case in past years.

The reports of the various committees in office during the past year **were presented and in all cases adopted and passed favorably by a unanimous vote.**

Election of Officers.

The election of officers and the appointment of committees for the coming year was the most important business brought before the convention. The new officers elected were as follows:

President, James Trainor, Jamestown, N. Y.
Vice-president, Leroy R. Stone, Greenville, Pa.
Secretary, M. C. Judd, Meadville, Pa.
Treasurer, L. L. Lord, Meadville, Pa.

The board of directors for the next year will be composed of **A. C. Eynon,** Canton, O.; **Frederick L. Albracht,** Erie, Pa.; **M. J. Murray,** Jamestown, N. Y.; **H. P. Cahill,** Akron, O., and **W. J. Scholl,** Youngstown, O. The first two gentlemen are newly elected members of the board, and will serve in this capacity for

two years. The remaining three were elected last year and will hold office for another year.

The Sanitary Committee that will serve during the coming year is composed of James A. Shorthill, Canton, O., chairman; Frank D. McCue, Oil City, Pa.; E. W. Webster, DuBois, Pa.; W. D. Bunce, Franklin, Pa., and Harry Smith, Warren, O.

The following **Apprenticeship and Conference Committee** was named: George W. Whitehill, Butler, Pa.; chairman; Daniel T. Burns, Sharon, Pa.; James M. Reicy, Oil City, Pa.; Charles W. Wilson, Youngstown, O., and James Stott, Sharon, Pa.

The new **Auditing Committee** is composed of A. L. Schellhammer, Warren, Pa., chairman; C. W. Hoffman, Akron, O.; Frederick J. Miller, Erie, Pa.; John J. Wolf, Titusville, Pa., and R. E. Caldwell, Sharon, Pa.

The Essay Committee is the name of a new committee that was provided for for the first time this year, and consists of but one member, E. W. Henderson, of Erie, Pa. He will arrange for essays to be delivered at the various monthly meetings and also at the annual convention.

The report of Secretary M. C. Judd was read and is considered very favorable. It was unanimously adopted and ordered recorded on the minutes of the meeting. One of the most important features of this report was the section referring to the present membership in the Northwestern Association. There is at the present time a total of **186 members enrolled,** who are in good standing, of which **115 are located in Western Pennsylvania and 51 in Western New York State and Eastern Ohio.** At the annual meeting last year there were 172 members, so that there has been a very slight falling off in membership, although it is so small that it is hardly worth considering. At the annual meeting, one new membership, that of T. L. Banner, of Clarion, Pa., was acted upon and accepted, he having been voted into the association. There are also several other prospective members, most of which it is expected to bring into active membership within the next month or two.

The report of Treasurer L. L. Lord, of Meadville, **was presented, unanimously accepted and recorded.** This report is very favorable and shows that the association is in a healthy and flourishing condition, and that there is an excellent balance on hand after paying all obligations of the asociation.

After discussing briefly a few minor points, and extending a vote of thanks to both Secretary M. C. Judd and Treasurer L. L. Lord for their efficient and highly satisfactory work during the past year, **the business session of the day was over** and the meeting adjourned at about 6 o'clock in order that the members might enjoy their dinner and have time to prepare for the social events of the evening, including the banquet.

Meeting of the Executive Board.

On Friday morning the meeting of the executive board was held, this meeting being merely a formality. The board organized, after which routine business was transacted, including the auditing of bills and accounts due, discussing general conditions, etc., after which the nineteenth session was formally adjourned, and will meet at the same place next year, and at a date to be decided upon later.

At this meeting, as well as at the general session on the preceding day, the situation between the master plumbers and the manufacturers and jobbers of plumbing materials was discussed. This condition as existing, is considered eminently satisfactory, as the relations between the master plumbers and the manufacturers and jobbers are most pleasant.

The Social Features.

Thursday evening was devoted to dancing, progressive pedro and the great event of the year in the association, the **annual banquet.** The dance was given in the ball room of the Hotel Rider, and eight tables of progressive pedro occupied one end of the foyer of the hotel. Music for the dancers was furnished by Lord's Orchestra, which came up in the afternoon from Meadville, Pa. Dancing, as well as card playing, commenced at 8:30, and continued until 11, when the banquet was announced in the main dining room of the hotel. The members and their wives, daughters and guests marched the entire length of the hotel to the banquet hall, where they were seated at two long tables parallel with each other, and running the entire length of the dining room.

It was a merry party that gathered around these tables, and the entire room rang with the laughter of the happy crowd. **An excellent menu was served,** and it is needless to say that it was heartily enjoyed by all who partook of it, as it had been prepared throughout in the style for which the Hotel Rider is famed all over this part of the country.

At the conclusion of the banquet, **Charles F. Kist, the retiring president, was the first speaker,** and thanked the members for their liberal and hearty support during his term of office, commending them individually and collectively on the excellent showing they have made through what has been one of the worst years in the recent history of the plumbing and heating business, and during one of the severest financial panics that this country has ever gone through. **He then introduced his successor, James Trainor,** of Jamestown, N. Y., who had been elected at the afternoon business session. Mr. Trainor in a brief address thanked the members for the honor they had conferred upon him by his election, and said that he wanted to introduce one of the best known and most enthusiastic members of the association, and one of its hardest workers, **A. C. Eynon,** of Canton, Ohio. Mr. **Eynon,** in addressing the assembly, stated that he would review briefly the growth of the association from a small body of plumbers who had formed it nineteen years ago, and showed how steady the growth had been, until it now stood in first place among similar associations in the entire United States. **The membership,** he said, **was composed of broad minded business men engaged in the plumbing and heating contracting business, and that this broadmindedness had had much to do with its growth.** He also spoke of **the sisterhood connected with the association,** and composed of the wives and daughters of the members, paying them **a high compliment for the interest that they have always shown in the welfare of the association,** and lending their efforts toward its improvement. He then referred to the retirement of **Thomas Stone,** of Greenville, Pa., from the plumbing business. Mr.

Stone was **one of the founders of the association,** and has been a member continuously since its organization. He stated that **he desired to nominate him an honorary life member,** which was immediately seconded by L. L. Lord. A standing vote of the members was taken, which was unanimously in favor of such action, and Mr. Trainor declared **Mr. Stone elected an honorary life member,** having all rights and privileges of other members with the single exception of holding office.

Mr. Stone was then called upon, and after thanking the members for the great honor which they had just conferred upon him, which he stated was one of the greatest he had ever received, spoke on the great advancement that has been made in the plumbing business during the past fifty years. He reviewed at length **the changes in methods as compared with a half century ago,** and stated that the United States leads the entire world in the plumbing business, the manufacture of fixtures, supplies, etc., and that all other countries copy after us, and pattern their fixtures after our most advanced designs and styles. He concluded by stating that the presence of the ladies at the conventions of the association was greatly appreciated, and that this has had much to do with the success of the annual meetings. At the conclusion of his address, he was presented with a handsome bouquet of carnations by L. L. Lord.

W. G. McCormick, of New York City, was then **called upon to speak for the press** representatives present who represented the leading plumbing and heating trade journals published in this country, namely "Domestic Engineering," "The Metal Worker," "Plumber and Steam Fitter," "The Plumbers' Trade Journal," and "Engineering Review." On behalf of the other representatives of the above publications, he thanked the members of the association for their kind and courteous treatment at this and past conventions.

E. W. Sanborn, general sales manager of the United States Radiator Company, of Dunkirk, N. Y., was then called upon to speak for the various representatives of the manufacturers and jobbers of plumbing and heating fixtures and supplies, and announced that instead of speaking to those present, he would give a pantomime imitation of "A Young Lady Dressing for a Ball." This imitation was one of the biggest hits of the evening and brought forth tremendous applause, the supposed antics and preparations of the young lady being ludicrous in the extreme. Some said that the same movements has been gone through by some of the young ladies present at the time, but this was immediately denied by those accused.

In the Ball Room.

Immediately after this entertainment, the entire assemblage again repaired to the ball room and to the card tables, where dancing and progressive pedro were again indulged in until after 3 o'clock in the morning.

There was an unusually large number of young girls present this year, and particularly from Jamestown, N. Y., and it was noted that none of the young ladies from that city wasted much time sitting around the hall. They were all popular to the extreme, and several of them are said to have made deep impressions on several of the younger single men present. At all events, it certainly looked that way, and particularly when some promises were made by these same young men to stop off at Jamestown during the coming summer were overheard and reported.

Prizes Awarded at the Card Tables.

The prizes for the card tables were awarded after the banquet was over, and the first ladies' prize went to **Mrs. L. L. Lord.** It was a handsome piece of hand-worked fancy work in the shape of a lace center piece for a table. The second prize, also a piece of fancy work, was given to **Miss Edna Woodhead,** while the third went to **Mrs. P. B. Graham.** This was a large rug, attached to which was the legend, "Beat This if You Can't Beat at Pedro."

The gentlemen's first prize, an ebony clothes brush and an ebony hat brush, was awarded to **James Woodhead;** while the second, a beautifully decorated tobacco pouch, went to **T. A. Morley.** The third prize, a stein, was captured by **James Stott.**

Various Excursions.

On Friday morning various excursion parties were formed, and trips taken to nearby places of interest. Impromptu races were held, in which both the ladies and gentlemen were entered. No records were kept of the winners in these events, particularly in the several ladies' races, as so many claimed first places that it was impossible to straighten the real winners out satisfactorily. Others went to the bowling alleys, to the tennis courts, the golf links and the many springs, so that time did not drag heavily on any person's hands. But few of the members left in the morning, the majority waiting until the evening trains. All were sorry the convention was over, as it was unanimously agreed that this gathering had been the most pleasant and most successful that had ever been held.

Supply Men in Attendance.

There were not nearly so many representatives of the manufacturers of plumbing and heating goods, and the jobbers in the same lines present at the convention as has usually been the case, although there were some present throughout the entire convention. Those noted greeting their old friends and customers were: Charles C. Johnston, of the Henerendeen Manufacturing Company, Geneva, N. Y.; H. L. Town, of the Lindsay Light Company, of Chicago; the Keystone Brass Company, Erie, Pa.; E. W. Sanborne, of the United States Radiator Company, Dunkirk, N. Y.; and John Lytle, of Woodward & Wanger, Philadel-

Interior view of up to-date plumbing and heating establishment of H. A. Call, at Cornwall-on-Hudson, N. Y.

phia, and A. L. Schellhammer, of the Pennslvania Furnace & Stove Company, of Warren, O., and James Smith, of the H. Mueller Manufacturing Company, of Decatur, Ill.

Ladies in Attendance.

Among the ladies present were Mrs. C. W. Hoffman and Mrs. H. P. Cahill, both of Akron, O.; Mrs. A. C. Eynon, of Canton, O.; Mrs. James Smith, Pittsburgh, Pa.; Mrs. W. J. Scholl, Youngstown, O.; Mrs. M. C. Judd, Meadville; Mrs. H. S. Smith, Warren, O.; Mrs. Thomas Stone and Mrs. Leroy R. Stone, both of Greenville, Pa.; Mrs. John Heald, Mrs. John McGinity, Mrs. Amel Johnson, Mrs. James Davey, Mrs. John F. Smith, Mrs. A. Stewart, Mrs. A. A. Morley, Mrs. M. J. Murray, Mrs. Joseph Trainor, Mrs. Cohn T. Marsh, Miss Edna A. Woodhead, Miss Shirley I. Stearns, Miss Gretchen D. Stearns, Miss Rosalie Chatfield and Miss Laura B. Stewart, all of Jamestown, N. Y.; Mrs. Frank D. McCue, Oil City, Pa.; Mrs. Fred J. Miller, Erie, Pa.; Mrs. P. B. Graham, Meadville, Pa.; Mrs. George P. McIntire, Erie, Pa.; Mrs. A. L. Schellhammer, Warren, Pa.; Mrs. E. C. Fisk, New York City; Miss Ackerman, Erie, and Mrs. C. E. Wood and Miss Louise Lord, both of Meadville, Pa.

George D. Steele.

Tips on New Work

Battle Creek, Mich.—The citizens of this place have voted $150,000 for the purpose of erecting a city hall.

Charleston, S. C.—People's Building & Investment Company will erect an eight-story steel frame bank and office building here, at a cost of about $300,000.

Milton, Ore.—The plans for the new high school building here, to cost about $25,000, have been adopted as prepared by Architect C. E. Finkenbinder of Walla Walla.

Brunswick, Ga.—Work will be started soon upon the St. James Lutheran church, and it is expected the building will be ready for occupancy by fall. Probable cost some $12,000.

Chicago, Ill.—It is said that I. A. Levinson will erect a new $50,000 theater on Garfield boulevard, facing Calumet avenue. It is expected that the building will be completed by July 15.

Baltimore, Md.—Plans have been completed for the erection by the Fidelity Deposit Co. of a fifteen-story granite and concrete building, costing some $1,250,000, and located upon Charles and Lexington streets. Baldwin & Pennington, architects.

Chicago, Ill.—It is reported that the Barrett Manufacturing Co. has purchased a tract of land and will erect a large plant upon Sacramento avenue, which concentrated with their other building paper, paving material and paint plants will call for an outlay of about $1,000,000.

Ogden, Utah.—The Peery department house now in course of construction, corner of Adams avenue and Twenty-fifth street, is the first apartment house in this city. It will contain twelve apartments and cost some $42,000. The building will be amply supplied with hot water and heated by steam and is expected to be completed by next August.

Pine Bluff, Ark.—Members of the First Presbyterian church at Pine Bluff are making arrangements to build one of the largest and handsomest places of worship in Arkansas. John Gaisford, architect. The new church will be of buff brick, with terra-cotta trimmings, and have a seating capacity of nearly a thousand persons, and will cost about $25,000.

Chicago, Ill.—According to reports the site for Chicago's new postoffice building has been selected and the favored spot is at Halsted and Congress streets. It is expected that the new postoffice will cost in the neighborhood of $1,500,000 and be devoted to postoffice purposes exclusively. The postoffice in the federal building will become a branch when the new postoffice is built.

Birmingham, Ala.—This city has shown a steadily progressive forward movement along the building line for some time. During the month of February the building activity was double that of the corresponding month of 1908, in which year all previous building records of the history of the city were broken. The record for February, 1909, shows that $132,340 was authorized for the construction of buildings, while February, 1908, showed only $91,503.

Philadelphia, Pa.—Twenty-five acres of ground at Washington lane and Stenton avenue, Germantown, have been purchased by the Northern Realty Co., from the George W. Carpenter estate. The ground is reported to have been held at $4,000 an acre. The land will be developed by the purchasing company as a suburban section by the erection of a number of handsome residences ranging in value from $8,000 to $15,000 each. The Penn Construction Co. is contemplating the erection of a modern apartment house on the lot on the northwest corner of Fifty-first and Chestnut streets, which has recently been purchased from Frank H. Benham for $28,000.

NEW PUBLIC SCHOOLS FOR WASHINGTON.

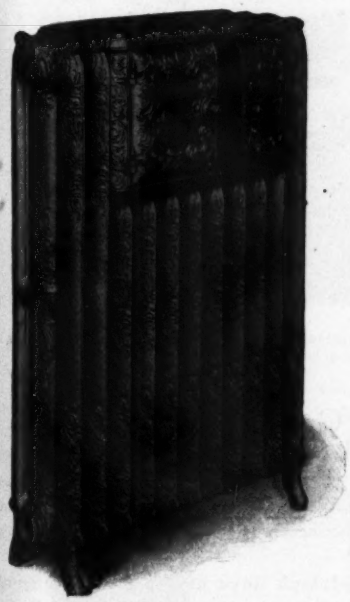
Washington, D. C.—Provisions in the District appropriation bill, which become effective July 1 next, include a number of new school buildings, in each of which will be installed the most modern types of plumbing. The bill also includes sums of money for the purchase of a number of new sites, either for new buildings or for additions to existing buildings. The new buildings to be constructed are an eight-room school in or near Cleveland Park, $80,000; for purchasing ground and erection of a school at Chevy Chase, $40,000. These buildings as well as other District structures now built and to be erected in the future will be superintended by the municipal architect, an official to be appointed soon by the commissioners under authority of an act of Congress, at a yearly salary of $3,600. This new position will be established July 1, 1909.

ROCHESTER OPENS BUSY BUILDING SEASON.

Rochester, N. Y.—The building report for the month of March just submitted shows an increase over March, 1908, of $263,832. The total for the month was $596,930. In all, 249 permits were issued during the month, many being costly dwellings. Very few permits for commercial buildings are included in the report. Among

Snug Selections.

You can always find among our wide assortment of patterns AMERICAN Radiators to fit every space; short, narrow, in corners, around bay windows and in angles, as snugly as a "a pigeon in a pie" as the old saying goes.



AMERICAN Rococo Radiator in dining room pattern.

AMERICAN Radiators and IDEAL Boilers are made for the houseowner's service: In pleasing him by giving him the right pattern, size and shape to fit each of his needs the Trade reaps with us the harvest of his satisfaction.

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Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco

the permits for buildings outside of dwellings are: Stern Realty Company, 345 Clifford street, shop, $7,500; Hart & Zugelder, Exchange street, manufacturing, $9,900; Frank A. Meintel, 2 Joseph avenue, stores, $9,000; Rochester Railway & Light Company, Gas street, sub-station, $4,600; P. Koester, 569 Clinton avenue North, store, $5,000; J. J. Mandery, Main street East, offices, $7,000; Reuben A. Punnett, 218 West avenue, stores, $9,500; F. T. Ellison, 33 Clinton avenue North, stores, $10,000; Sherwood Shoe Company, addition, $9,800; permits issued for thirty-three dwellings to cost from $4,000 to $16,000.

opened for business at the corner of W. Lombard and Catherine streets. Mr. Nichalson is a practical man along plumbing and heating lines, being formerly with Geo. Kaiser.

Milford, Del.—Pierce & Carmean were the low bidders on the plumbing and heating work for the post-office building to be erected at Milford. The plumbing contract amounted to $1,465 and the heating to $1,060. Their figure of $990 secured the contract for the installation of a vapor heating system in the residence of Chas. H. Pettyman.

The Virginia-Carolina Supply Co., jobbers of plumbing and steamfitting supplies, at 79-83 Commerce St., Norfolk, Va., maintain this showroom for baths, closets and lavatories.

Southern Notes

Meridian, Miss.—The Guy & McPhillimy Co. has been incorporated here to conduct a general plumbing business. Amount of capital stock $5,000. The incorporators are, Eugene Beggerly, L. T. Guy and J. A. McPhillimy, all of Meridian.

Baltimore, Md.—J. T. Spellman, Jr., has opened a plumbing and heating establishment at 2909-2911 York road and promises to make a live competitor in that section. He will be pleased to receive price lists and catalogues from manufacturers and jobbers along his line.

Staunton, Va.—The Virginia Plumbing & Heating Co. has been formed here, as successors to Fifer Bros., to conduct a general plumbing, heating and lighting business. Geo. Cotterell will manage the plumbing department and A. G. Fifer the acetylene lighting branch.

Baltimore, Md.—Nichalson Sanitary Plumbing and Heating Co. is the name of the firm which has recently

The Great Northwest

Burlington, Wis.—A. H. Mueller, of Racine, Wis., has established a branch plumbing shop here.

Galesville, Wis.—Johnson & Feirung is the name of a new plumbing concern that has established a shop here.

LeRoy, Minn.—Joseph Boyd has opened a plumbing establishment in this city, and is in the market for goods.

Minneapolis, Minn.—C. E. Simonds has opened a plumbing and heating establishment at No. 3008 Fourth avenue south.

Virginia, Minn.—A. F. Thayer of this city, has sold his plumbing business, known as the Virginia Plumbing and Heating Company, to J. S. Cherne.

Bemidji, Minn.—Jerrard & Covington, leading plumbers of this city, have dissolved partnership, the former continuing the business in his own name.

Grafton, N. D.—George A. Loos of this city was awarded the contract for the plumbing and heating

in the new state institution to be erected here. The consideration is $2,855.

Wausau, Wis.—Tish & Peters is the name of a new plumbing concern here. The partners are Max Tish and Louis Peters, both experienced plumbers. The concern has opened a shop in Washington street.

Milwaukee, Wis.—L. H. Plum, one of the pioneer plumbers of this city, has retired. The stock at 459 Milwaukee street has been sold and May 1 will see the retirement of the veteran from active business.

Milwaukee, Wis.—The Milwaukee Board of Public Works has awarded the general contract for erecting and equipping the new municipal garbage crematory to the Power Specialty Company, of New York, which company made a bid of $174,384.25. The McDonald Engineering Company, Chicago, made a bid of $150,782, and Lewis & Kitchen, Chicago, of $175,371. The Power Specialty Company will install furnaces, combustion chamber, pre-heaters, forced draft apparatus, flues, boilers, pumps, etc., for $118,650. The general bid, with the high saving guaranteed, made the Power company's bid more acceptable than those of the others. Hering & Fuller, Chicago and New York, made the plans and specifications, and Dr. Rudolph Hering was consulting engineer for the city. Dr. S. A. Greeley of New York will be supervising engineer during construction. L. B. Nutting, general manager, and John Primrose, chief engineer, tendered the board and city officials a dinner as an appreciation.

With the Makers

A MALLEABLE RADIATOR NIPPLE.

The Malleable radiator nipple made by the Indianapolis branch of the National Malleable Castings Company has been adopted by the Shirley Radiator & Foundry Company, Indianapolis, Ind. "Domestic Engineering" has just received a sample of this nipple made of heavy stock, on which no machine work has been done, and it presents a very smooth and even surface, and has the appearance of being a strong and serviceable nipple. R. Martindale of the Shirley Radiator & Foundry Company has had considerable to do with the development of this nipple, and advises the company will use it generally from now on.

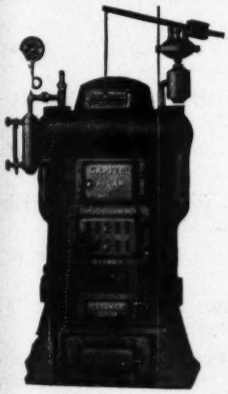
NEW HEATING SPECIALTY FIRM.

H. A. Bogardus & Co., 178 East Huron street, Chicago, is a new firm in the heating specialty field. It has a modern plant, well equipped for the manufacture of pressure and vacuum gauges, indicating and recording instruments, automatic air valves and steam specialties. Mr. Bogardus has been connected with one of the large manufacturers of this line of goods in Chicago for a number of years and is amply experienced to successfully direct the business.

OPENS OFFICE IN PROVIDENCE.

A. R. Currier, formerly with the Draper Company of Hopedale, Mass., has recently accepted a position as New England agent for Stuart W. Cramer, of Char-

Capitol Solar Boilers



For residence heating, the two points most needed are prompt action and economy in fuel. The **Capitol Solar Boiler** is therefore especially suited for this work.

Quick acting because of its deep corrugated firepot and improved waterways, it is also economical because the heat is retained in the boiler until completely absorbed.

Made in a range of capacities, adapted to any use of a round boiler.
Capacities: Steam 225 to 1200 sq. ft. Hot Water 375 to 2000 sq. ft.
Nineteen sizes, steam or water—five diameters of grate.
Write for complete descriptive circular.

United States Heater Company.

General Offices and Works: Fort St. and Campbell Ave., DETROIT, MICH.

Branches:		Sales Agencies:
DETROIT	120 Jefferson Ave.	NORFOLK & RICHMOND, VA., Virginia-Carolina Supply Co.
NEW YORK	129 Worth St.	MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
CHICAGO	54 Dearborn St.	ST. LOUIS, MO., L. M. Ramsey Manufacturing Co.
KANSAS CITY	120 W. 11th St.	DENVER, COLO., Kellogg & Stokes Stove Co.
OMAHA	916 Farnam St.	

lotte, N. C., and opened an office at Room 410 Howard Building, Providence, R. I. Mr. Currier is devoting his energies to the introduction in New England of the Cramer air conditioning and automatic humidity and heat regulators.

Henry Stein, manufacturers' agent of 48 Cliff street, New York, has taken over the eastern sales agency of the Knott-Van Arnam Manufacturing Co., of Fort Wayne, Ind. Mr. Stein has a variety of the company's wood work on display, including five styles of low and three high tanks with seven different styles of seats. Mr. Stein is now also representing the Barnes Manufacturing Company of Mansfield, Ohio, manufacturers of enameled ware. For the latter firm he will cover the eastern territory with the exception of New York City.

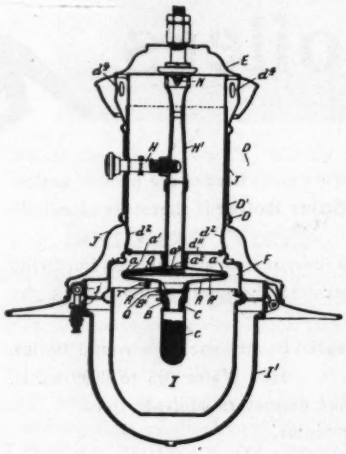
Patents

917,423. Radiator. Andrew C. Edgar, Philadelphia, Pa., assignor, by mesne assignments, to Abram Cox Stove Company, Philadelphia, Pa., a Corporation of Pennsylvania.

917,443. Pressure-Regulating Valve. Frederick L. Jahn, Philadelphia, Pa., assignor to The Watson and McDaniel Company, Philadelphia, Pa., a Corporation of Pennsylvania.

917,454. Sink. John F. Kelly, Trenton, N. J.

917,876. Gas-Lamp. James Keith and George Keith, London, England. Of the seven claims made for this invention one of the broadest reads as follows: "In an inverted incandescent gas lamp, the combination with



the burner tube of a gas and air heater connected to said tube, said heater comprising two cones disposed base to base and a diaphragm perforated at its edge fixed between said bases, and a perforated nozzle connected to said heater."

917,490. Blow-Off Valve. Joseph Rothchild, New York, N. Y., assignor to John Simmons Co., New York, N. Y., a Corporation of New York.

917,521. Heating System. Frank E. Baker, Oskaloosa, Iowa.

917,579. Valve for Hot-Water Heating Systems. Edmund F. Gebhardt, Easton, Pa.

917,529. Basin. William A. Bloom, Rochester, N. Y.

917,663. Septic Tank. Henry C. Rogers, Estes Park, Colo.

917,689. Faucet. Owen Warnock, Brooklyn, N. Y.

917,704. Temperature-Regulator. Adolf Beler, Pittsburg, Pa., assignor to Beler Water Heater Co., Pittsburg, Pa.

917,717. Self-Adjusting Pressure Sink-Flusher. William H. Deidrick, Chester, W. Va.

917,740. Valve Mechanism. Edward V. Anderson, Monessen, Pa., assignor, by direct and mesne assignments, to Golden-Anderson Valve Specialty Company, Pittsburg, Pa., a corporation of Pennsylvania.

918,456. Flushing-Tank. Charles N. Marcellus, Grand Rapids, Mich. Among the claims made for this invention the following are the most important: "A flushing tank molded in a single piece of ceramic material and having an outlet, and an overflow upon one wall thereof, said overflow extending within the bottom

of the tank to the outlet, and a gutter adjacent the bottom of the tank for receiving moisture accumulating upon the outer surfaces of the walls of the tank, said gutter having an outlet passage opening into the outlet of the tank, the gutter being inclined downwardly from its ends toward said passage, and a guide arm formed within the tank and overhanging the outlet, one wall of the tank being grooved to form air spaces."

917,813. Valve for Hot-Water Heating Systems. Herbert G. Thomas, Lake Forest, Ill.

917,917. Water-Motor. William C. White, Columbus, Ohio.

917,923. Emergency-Stopper for Automatic Sprinklers. James P. Casey, St. Louis, Mo.

917,933. Water-Purifier. Hermann G. Dittbenner, Minneapolis, Minn.

917,952. System of Hot-Water Heating. Hosea K. Kriebel and Irwin Z. Kriebel, Philadelphia, Pa.

917,971. Hydraulic Rotary Pump. Ira H. Spencer, Hartford, Conn., assignor to Organ Power Company, Hartford, Conn., a corporation of Connecticut.

917,981. Valve. David T. Williams, Paterson, N. J., assignor to Vacuum Engineering Company, a corporation of New York.

918,134. Steam-Trap. Norman English, Detroit, Mich.

918,137. Pipe for Connecting Water-Closets with Soil-Pipes. William A. Fleming, New York, N. Y., assignor to F. N. Du Bois & Company, New York, N. Y., a firm.

visor of Plumbing for the City of St. Louis, and John N. Barber, Superintendent of Plumbing for the Board of Education of St. Louis.